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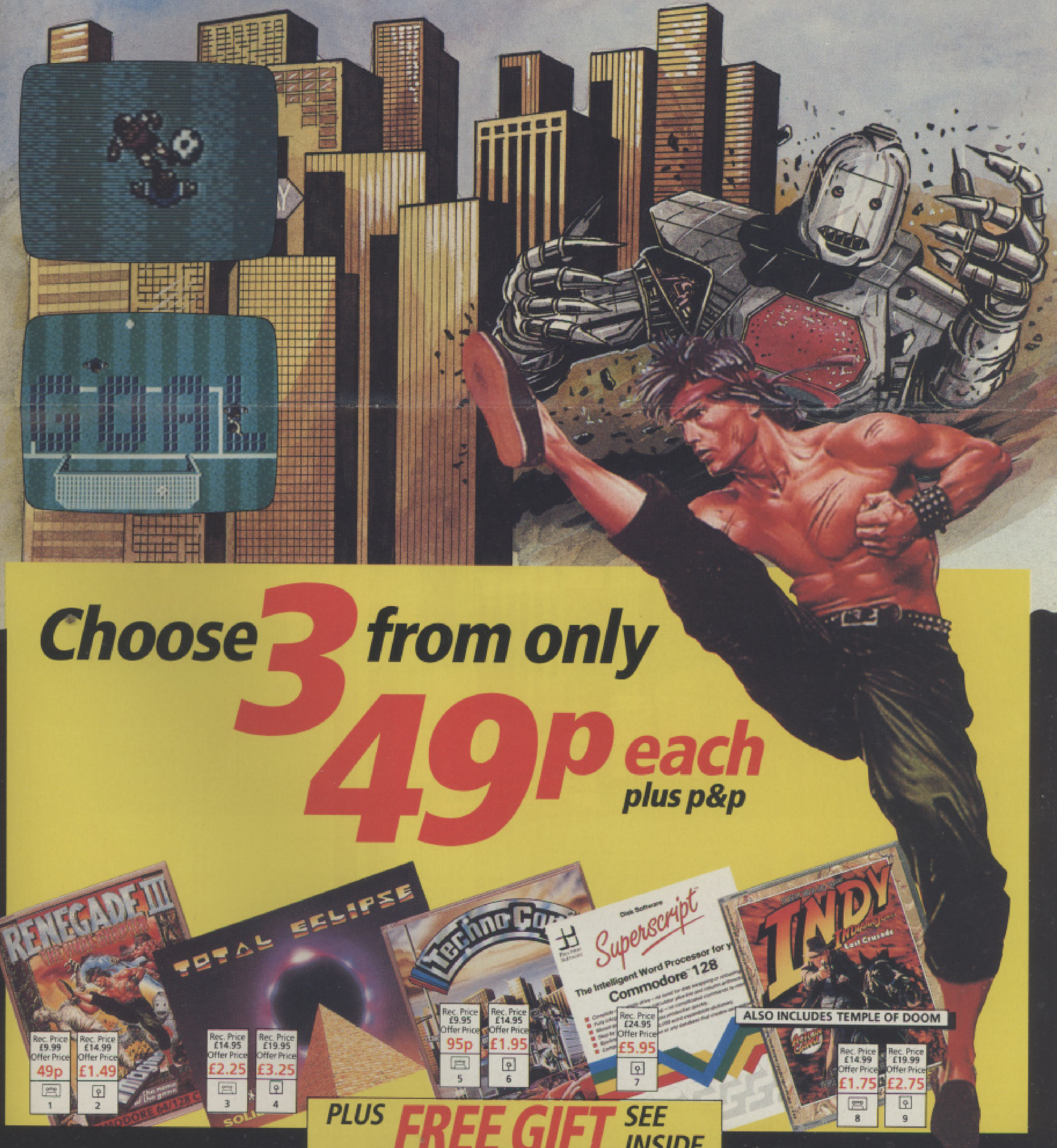
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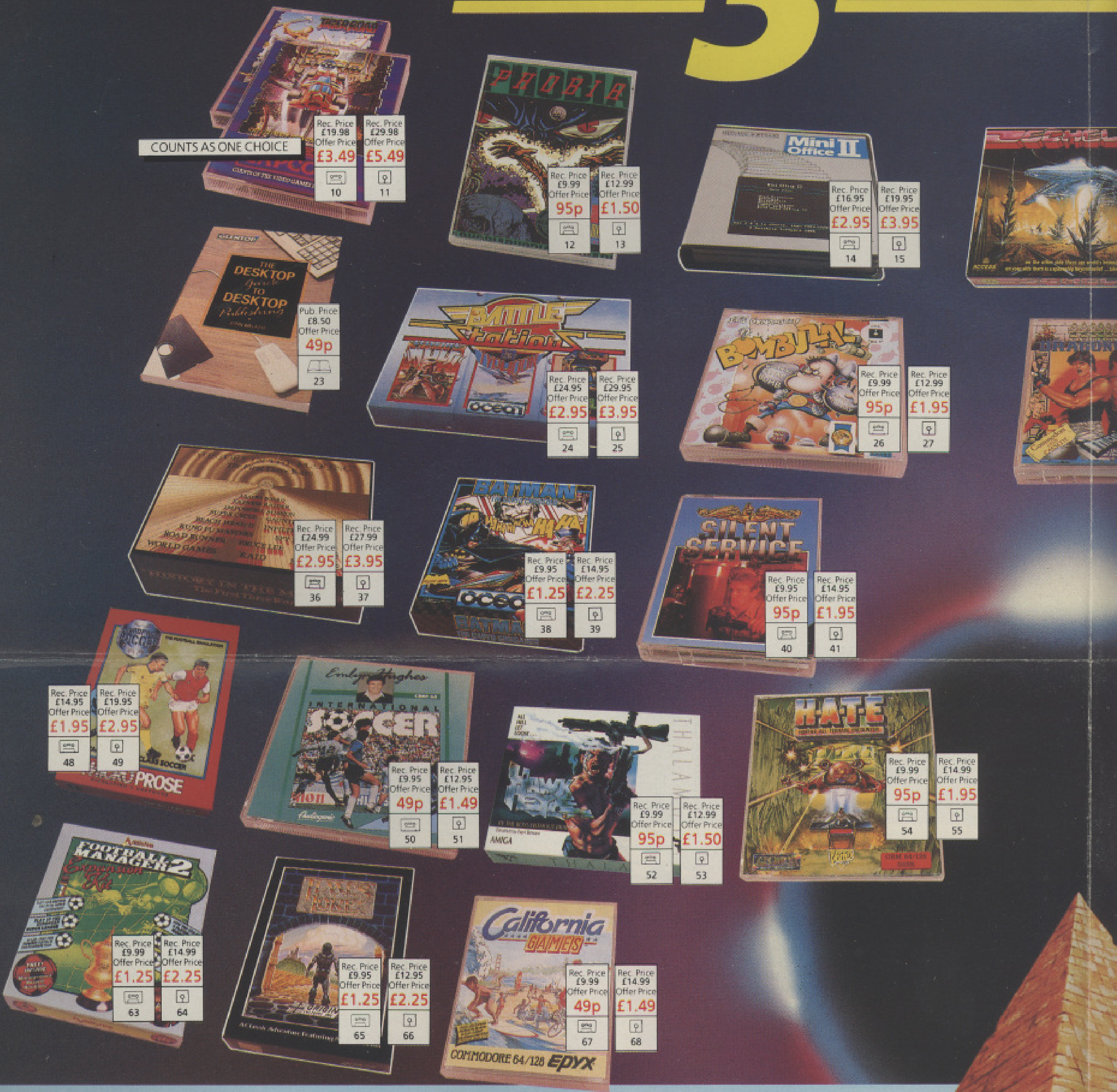
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1 RENEGADE 3 Renegades's back in the final and best instalment in the series. He mixes martial arts with marital arts in this blockbuster, as he travels through time to rescue his girl.

2 LED STORM/TIGER ROAD Road racing destruction and hand to hand combat make a great combination. Here are the Capcom conversions in a double pack that's exclusive to The Home Computer Club.

3 INDIANA JONES Blaze a trail as the death defying, whipcracking explorer in this action-packed double-bill, featuring the two-fisted, four-level arcade game, The Last Crusade. Also included is the unforgettable Temple of Doom.

4 PHOBIA Arguably the fastest scrolling 8-bit game yet. It's an addictive shoot-em-up from top software talents Crowther and Bishop that's loaded with IQ testing elements. Are you smart enough to stay alive?

5 MINI OFFICE 2 Much acclaimed business utility for the home office, that features a word processor, spreadsheet, ascii comms software, label printer and more. Comes complete with instruction manual.

6 ECHELON Complete with patrol zone map and operations manual, this futuristic space fighter simulator combines spectacular 3D cockpit thrills with an exploration adventure. Sit down, strap yourself in and fly into the 21st Century.

7 BLASTEROIDS Great conversion of the Tengen Coin Op hit. Nine levels of asteriod and spaceship blasting, before you can take on the evil Mukor.

8 POWER C Writing in C gives you two advantages over BASIC. It's easier to use and programs written in C run faster. This program teaches you how to program in C, plus full screen syntax checking editor, compiler, linker and much more.

9 TOTAL ECLIPSE 1&2 Third, and best so far, in the Freescape series of arcade adventures that give you the feeling of "really being there". You are in a pyramid trying to lift a curse that will destroy the world. Plus, exclusive to The HCC-Spinx Jinx, Total Eclipse 2.

10 WEC LE MANS Ocean's great conversion of the 24 hour endurance race around France. Only the skilful drivers survive, let alone win.

11 DESKTOP GUIDE Written by a journalist, this book leads the amateur into this revolutionary area. Explores design, page make-up and image setting technology, as well as recommending best systems for different needs. A must for those who want to know more about DTP.

12 BATTLE STATIONS We got Ocean to put Operation Wolf, Typhoon and Guerilla on one action packed compilation. You'll be glad we did, as this represents tne best value war pack around.

13 BOMBUZAL Help little Bombuzal defuse bombs before they blow him up, in glorious 3D. Tony Crowther wrote it, and got people like Jeff Minter and Jon Ritman to devise fiendish levels. That's got to be recommendation enough.

14 SUPERCRIPT Superscript is the classic word processing package for the C64, enabling you to produce professional letters and documents.

15 DRAGON NINJA Vicious Guard Dogs, women warriors and ninja assassins are just some of the foes to be overcome in this fight to the finish. Good job you learnt your martial arts at night school.

16 BETTER DEAD THAN ALIEN Good old fashioned type game where you are blasting aliens who descend from the sky downwards. Over 50 levels of classic action with an infuriatingly catchy tune.

17 COMPLEAT BARBARIAN Exclusive edition to the HCC features Barbarian 1 AND Barbarian 2, which makes this the ultimate compilation for fans of the hack 'em up. Definitely not for the faint hearted.

18 3D POOL Realistic perspectives and a real-time rotating table add a new dimension to the pool hall. Experiment with the Cannon, Chain, Plant and Goalhanger and you'll soon be sweeping the board.

19 HISTORY IN THE MAKING US Gold have been one of the most influential software houses in the U.K. In this great value pack you'll see why – look out for Raid Over Moscow, Leaderboard, World Games, Beachhead 1&2 and much more.

20 BATMAN Ocean's great arcade adventure puts you as the caped crusader trying to rid Gotham City of your traditional foes by brain and brawn.

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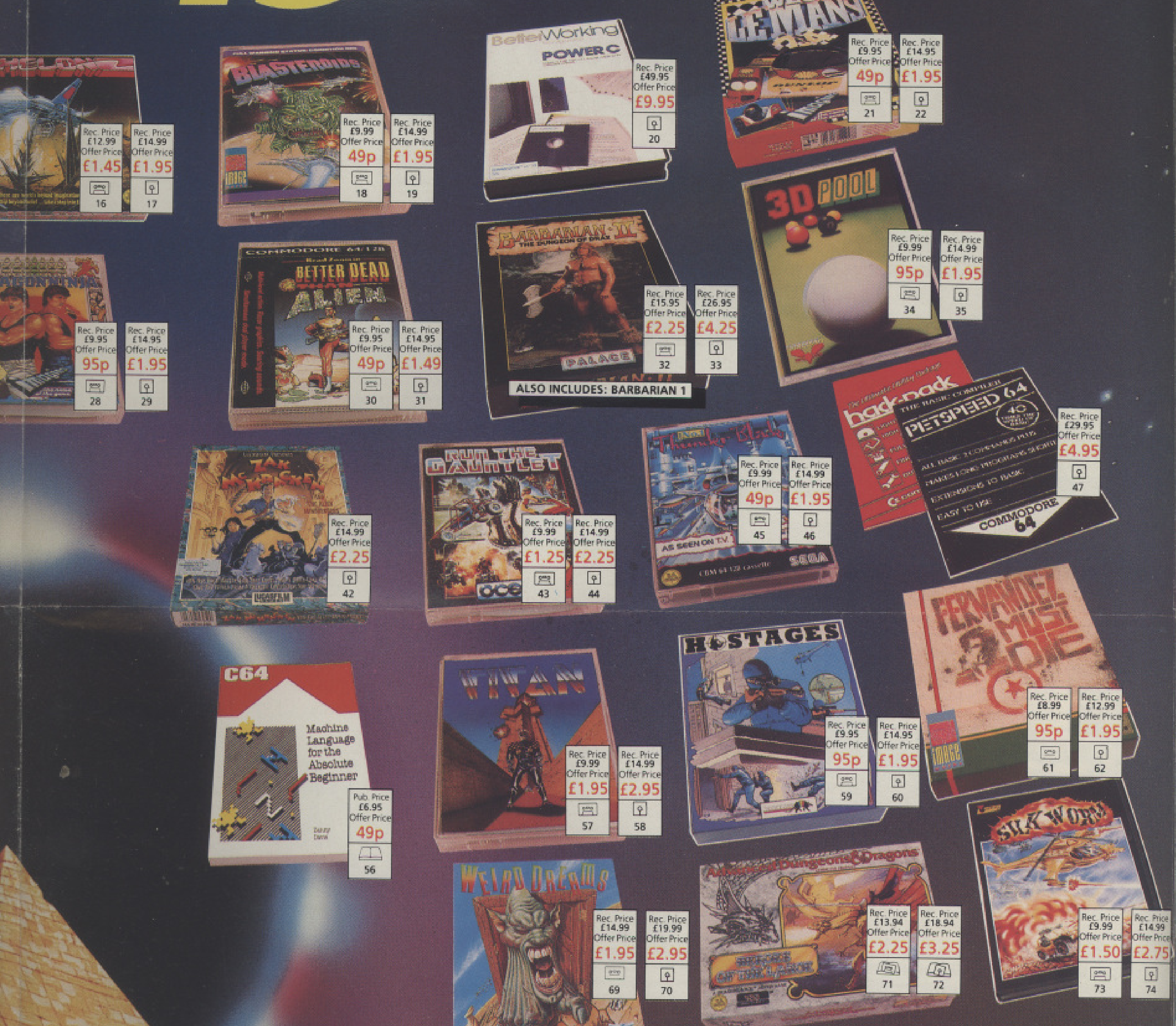
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21 TECHNOCOP From four wheeled action to two legged, this game has got it all. In your car you'll need to watch out for roadsters trying to hustle you off the highway. On the meanstreets, you've got to overcome gun-toting gangsters. There's no rest if you're to become a top technocop.

22 SILENT SERVICE Lots of games are called "classic", but most don't deserve the accolade. This submarine simulation does, as you find out what life below the waves is really like.

23 ZAK MC KRAKEN Help Zak and his pals unmask the alien saboteurs in this interactive movie that is played with the tongue firmly placed in the cheek. You even get a free copy of Zak's newspaper the National Inquisitor.

24 RUN THE GAUNTLET You've seen the TV Show, now play the game. Race speed boats, hovercrafts, drive buggies and bikes in this all action simulation.

25 THUNDER BLADE This excellent chopper game flies from the arcades into your micro.

26 PROGRAMMERS PACK Here's a two in one offer of The Hack-Pack – hi-speed ram disk, compressor and toolkit. Also a BASIC compiler that lets you run BASIC programs up to 40 times faster.

27 MICROPROSE SOCCER What, another soccer game? Don't worry! Overhead view, banana shots, bicycle kicks and even a bad weather option make this game the Liverpool of football simulations. Plus American six-a-side included on the flip side.

28 EMLYN HUGHES INTERNATIONAL SOCCER Brill soccer simulation, complete with pull down menu's offering loads of options – from 5 way directional kicking to choosing your players. Offers a mean game of soccer too.

29 HAWKEYE You're half-man, half-robot. A deadly killing machine battling through 12 lethal levels to collect the missing puzzle. Another tremendous Thalamus adventure which mixes parallax scrolling with spectacular animated graphics.

30 H.A.T.E. Blast the enemy squadrons with your dual laser cannon and prove you're the best Galactic Star Fighter pilot of AD 2320. You've got four lives, 30 levels of airborne combat, and the dangerous Hostile All Terrain Encounter.

31 C64 MACHINE LANGUAGE Come on, you've always said you were going to learn 6502 machine code. This book will help you.

32 TITAN Hit the ball against the bricks, but watch out for the skulls that will cause you to lose a life. Addictive and frustrating.

33 HOSTAGES As head of the elite Terrorist Intervention Combat Team it's your responsibility to safely rescue the Embassy hostages. Precision timing and ruthless efficiency are required as you mount your assault.

34 FERNANDEZ MUST DIE Large scale combat game, that has you fighting hopeless odds on foot and by jeep as you try to overthrow the evil Fernandez.

35 FOOTBALL MANAGER 2 Follow up to the best selling soccer strategy game, only this time there's more pressure as a soccer boss: now you get a real insight into how tough it is as a manager.

36 TIMES OF LORE Much acclaimed role playing game that takes you back to the dark ages, and leaves you there.

37 CALIFORNIA GAMES Surfing, frisbees, skateboarding and much more in the classic Epyc game that offers you a slice of life in the Sunshine State.

38 WEIRD DREAMS Wake up in a nightmare world of surprise, terror and the supernatural, where carnivorous roses and bizarre creatures mutate in front of you. Solve the puzzle and return to the normal world.

39 HEROES OF THE LANCE Dungeons and Dragons leaves the board and enters the micro – which makes it much more fun. This special edition includes the novel Dragons of Autumn Twilight to get you in the mood.

40 SILKWORM Pit your helicopter gunship against the enemy choppers and flying bombs. Weave, duck, dive and fire in combat flying that really sets the nerve-ends on edge. Highly recommended.

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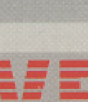

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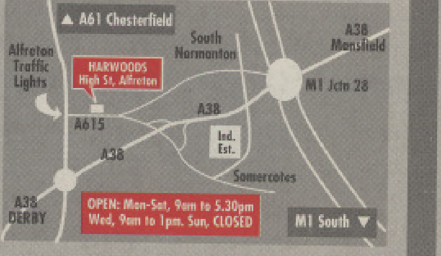

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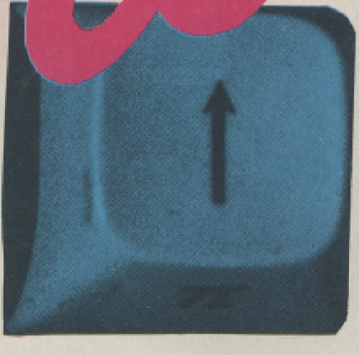

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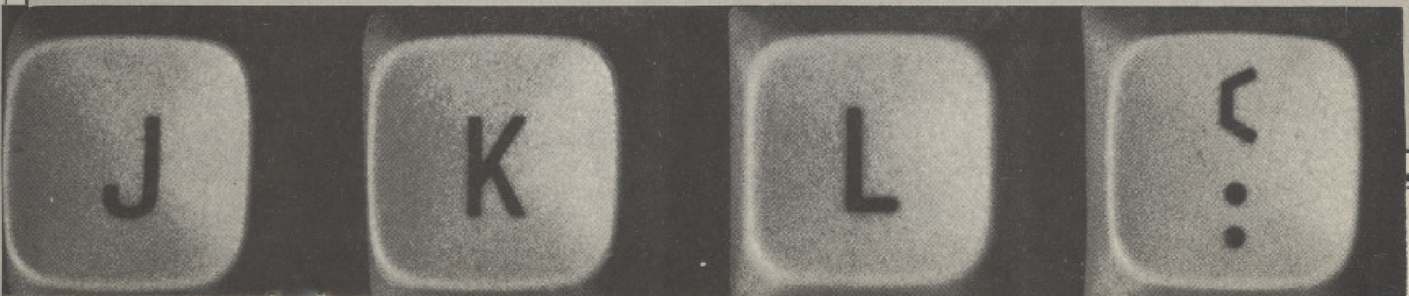

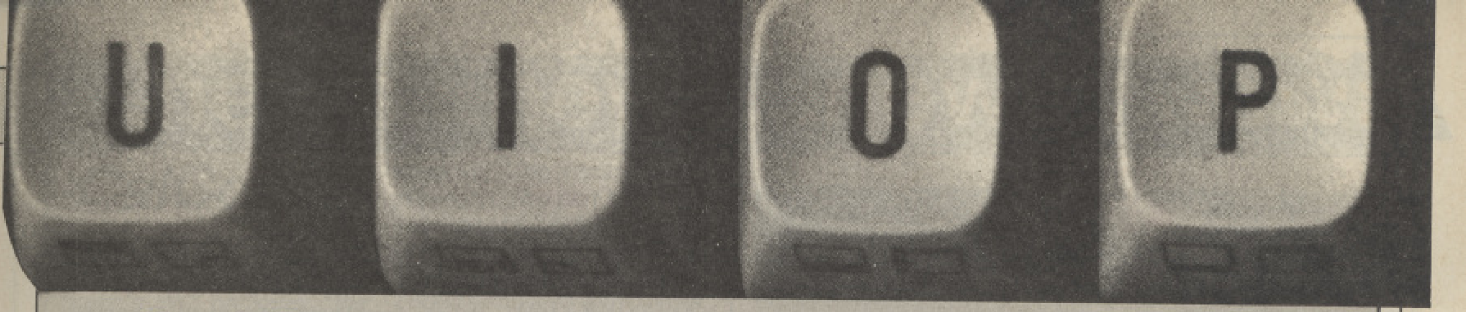

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Dear CCI Reader,

There is, in London now, stuck on walls and the windows of vacant shops, a poster that enigmatically claims "Nothing Ever Happens". Just those words. I don't know what it means but as it's plastered among the advertisements for new pop bands and concerts, it will probably turn out to be another hungry group of keyboard bashers and remixers. But whoever wrote their poster got it all wrong, plenty happens - especially in computing.

In this CCI, we look back to memorable moments in the history of computer games. That history began, more or less, with the start of the decade. Those changes led me to consider the tremendous happenings in the computer field and what might come over the next ten years. (With practically all other publications making a real meal out of the comparatively unimportant change of date, I'd made a resolution not to. But only the weak can't change their minds.)

The key event, for private computing, must be the well-named ZX80, born in the year 1980. That first home computer opened up a new dimension of electronic wizardry and, for £50, at a price we could afford.

Another less obvious event was the creation of two business machines, Commodore's PET and the Osbourne 1. Chuck Peddle, who created the PET for Commodore, designed it to be the first desktop computer and opened the eyes of the business world to the possibility of personal instead of company computing.

The Osbourne 1 was the first real portable computer - or "luggable" as it was so heavy. But it could be moved and we are now seeing its grandchildren spreading fast.

Commodore followed up the PET with the history-making VIC 20, the first to sell 1,000,000 and the C64 - and worldwide home computing took off.

A not very-known but highly influential computer was the Xerox Star, which introduced WYSIWIG, the "What You See Is What You Get" idea. That led to graphical instead of written interfaces, now commonplace on machines like the Macintosh, Amiga and even the 64 with Geos.

And there was the IBM PC, all conquering in the business world as the 64 has dominated the home market. Even in 1981, it wasn't the latest technology but nothing is as powerful as an idea whose time has come - and the PC was what business wanted, the follow-up to the PET.

While we are not going to leap suddenly into a Science Fiction future, most people get their computing predictions wrong through being not too bold but too conservative. I may fall into that trap myself but here goes - my Computing Guesses for the 90's.

I think that the use of the telephone, linked with a computer, will increase dramatically. That will lead to voice-operated computing growing massively. And that will mean that interfacing with computers will be done through natural languages, like English, not some awkward programming tool such as BASIC.

We are going to see greatly increased memory. The cost of memory has been through the 80's falling by more than a quarter per year. The size of memory will leap up by ten or twenty times every couple of years in the 90's. We used to think that 64K was big but that jumped to 256K for the first Amigas. The 90's will see home computers with 25 Megabytes as standard.

Computerised communication such as EMAIL will flourish. Goodbye Junk Mail. (Hello, Junk Voicemail?).

RISC (Reduced Instruction Set) - that means computers that are built not to waste time searching through the tremendously complicated structures of normal computers but only the reduced areas you actually need, so completing their task with greater speed and efficiency - will become the leading technology. They will be allied to parallel processing (lots of things happening at the same time instead of waiting for one to finish first), which will be provided by transputers or their lookalikes.

Multimedia will spread like wildfire. That will mean our digital audio-video recorder will take in and process data for our computers. And that will bring games played in video 3D on large, flat, high definition TV screens making today's look tiny, old and blurry. The games themselves will become so sophisticated that you won't just play them on a computer but need a computer to help you win them. (Goodbye, joystick. Hello, Artificial Intelligence)

There will be lots more stunning application such as in medicine with machines like the Amiga already being employed for heart scans, using speeds in excess of what will become normal for home computers, 50 MIPS - fifty million instructions per second. (Goodbye loading screens, hello instant realtime access)

If you've just received your first computer - probably a 64 - then you have missed some exciting changes in the 80's. If you are a longtime CCI reader, you'll say to the new ones, don't worry, there are going to be loads nore fascinating developments in the 90's!"

Nothing ever happens? Crazy! They must be living in a different world!

Antony Jacobson

Antony H. Jacobson
Managing Editor and Publisher

COMMODORE COMPUTING INTERNATIONAL

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CalComp

There was much high profile marketing hype behind CalComp's WIZ package, "the first input device to combine the ease-of-use of a mouse with the precision of an intelligent graphics pad." It is designed for use with 35 major DTP, graphics and busniess application packages on either the Mac or PC. It features a three button mouse with six settings (four are user definable) and a crosshair window giving much greater precision. The pad has a resolution of 1000dpi.

Among its selling points, said CalComp, are colour coded templates with call out software commands that "eliminate the need for time consuming pull down menus and keyboard commands."

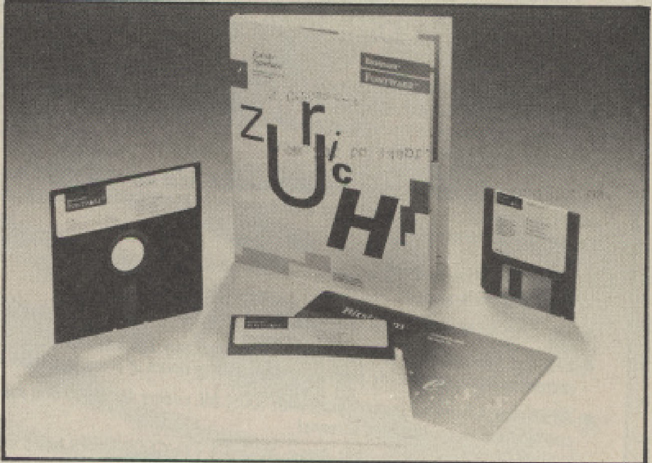
In the US the package has a $249 retail price tag with an introductory 90 day offer through distributor Ingram Micro D Distribution deals are expected to be with Xitan and Frontline in the UK.

SOFTWARE FOR CHILDREN

Electronic Arts has announced the release of Cartooners for PC compatibles. A previous award winner for the Apple IIGS computers, Cartooners is created especially for children. It is a computer cartoon studio with which users can create and animate colourful characters and scenery to produce musically accompanied stories. The program will motivate creativity and self-expression while providing entertaining results for the entire family.

Cartooners is the first product Electronic Arts has released specifically for an audience aged 6-12. They say it provides a simulating climate for children to widen their imagination by creating their own animated movies with music and sound effects. Cartooners is compatible with DeluxePaint, DeluxePaint II and DeluxePaint II Enhanced from which additional characters and scenes can be imported.

Children can choose from over 40 characters to star in their cartoons such as dogs and cats, bunnies and crackling fires. Characters can then be animated in a variety of ways including dancing, walking and hopping. Ten scenes from a country road and rustic barnyard to a scary cemetery are available for creating the right setting. Children can apply speech balloons to each character to create all kinds of imaginative stories and reports for friends and classmates. Cartooners also contains a printing option for children to create their own full-colour, illustrated storybooks. Price £24.99



FLEXIBLE FONTS

Bitstream is a variable font system which is available in a wide variety of typeface packages, and which can be used with any laser printer operating under any one of six popular software packages, or any application using PostScript.

It allows IBM compatible PC users to create individual fonts when used with any of the supported packages and the appropriate installion kit. The packages include Aldus Pagemaker 3.0, Ventura Publisher 2.0, WordPerfect 5.0, Microsoft Word 5.0, Microsoft Windows 2.03 and Microsoft Excel 2.1. Installation kits are supplied as standard with the Pagemaker 3.0 and Publisher 2.0 packages; installation kits for the remaining packages are available directly from their publishers.

The personalised fonts can range from 2pt to 144pt, with a collection of character sets of fonts for the user's printer, and stores them on the hard disk: they will then automatically appear in the program menu, and are ready for instant use at any time.

Bitstream fonts are available from Action in 15 typeface packages, including Headlines, Zurich, ITC Garamond, Letter Gothic, Futura Book and Baskerville. Price is £145.00 each, reduced to £133.85 for orders totalling more than £500.00.

Contact: Action Computer Supplies, Abercorn Commercial Centre, Manor Farm Road, Wembley, Middx, HAO 1WL.

INSANELY MAD!

System Three are releasing a game called Flimbo's Quest. In it, according to a press release smuggled to us, they have a professor who is, they claim, 'insanley mad'. We want to know if you can be 'sanely mad' or do you have to be a news release writer named Cale?

In the game you take on the role of Flimbo, and face menacing freaks. The professor (insanely mad, of course!) thought he had found a way to create immortality, but the press releaser tells us, "instead his experiment went hideously wrong and he found himself dramatically ageing ten times as fast, insanely mad" (there is is!) "and craving the bodily sustaining juices of a young girl to regain his lost youthfulness".

It is a cartoon animated platform game, set across 7 levels of fantasy. Find the castle before your girlfriend finds her maker!

Available on the C64 and Amiga from February. For further information, and advice on psychological or literary problems, (could they all be insanely mad there?) please contact Adrian Cale on 01 866 5692

Lattice is Piracy Buster

Lattice, Inc., makers of the Lattice C Compilers, RPGH II Compiler, SecretDisk II, Sidetalk, HighStyle, and other software products, has established a new corporate customer program which offers volume discounts to corporations that have multiple copies of Lattice products.

Under terms of the new program, volume discouts are given based on the number of products a corporation has registered with Lattice. Corporations can save 10 to 25% on new purchases, five to 15% on upgrades, 5 to 15% on training classes, and 5 to 25% on extended technical support.

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Maverick v3

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- *An all new Advanced Sector Editor with 100% ML coding for speed and superior performance. Allows editing in ASCII, HEX and disassembly modes. Plus comprehensive on-line help screens!*
- *For GEOS v2 owners with 1581 drives, Maverick v3's GEOS Toolkit has a utility that allows you to transfer the incredible GEOS v2 over to your high speed, high capacity 1581 drive! This transfers everything, meaning you can now run the 64 or the 128 version from the 1581 alone, without using the 5¼" disk at all! And, the 800k 1581 disk leaves plenty of room to transfer all your GEOS applications over to the same disk! Essential for serious GEOS users wishing to unleash the power of Berkeley Softworks revolutionary operating environment.*
- *Maverick v3 now boasts 400+ parameters that either copy or entirely break potentially destructive protection schemes of some of the world's finest software. Even current Maverick owners will be amazed by the enhancements and additions made, including special RAMBOard support capabilities, exclusive to Maverick v3*

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The 1581 Toolkit

Without it you don't know what your 1581 is capable of!

It shocked everyone at a recent London Commodore Show preview — it is The 1581 Toolkit by Kracker Jax, the makers of Renegade and Maverick.

While other companies rushed out ill-conceived and poorly executed programs to "cash in" on the new 1581 disk drive, our programmers took time to become experts on the 1581 before even looking at a drawing board. When they finished the Toolkit project a full year later, they had created a tight, integrated package of essential utilities that make the 1581 fly. We'll take your computer and 1581 as far as it was designed to go, then take it further.

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All of these custom utilities use extremely fast read/write routines. Where appropriate they allow full access to partitions. If you order now we will send you the 1581 DOS Reference Guide FREE! With over 100 pages of concise valuable information, this manual represents a year's worth of research and investigation into the inner working of the 1581 drive and includes a complete commentated ROM disassembly listing.

THE 1581 TOOLKIT (on 3.5" disk) ONLY £34.95

Includes your FREE 1581 DOS Reference Guide. The 1581 Toolkit, works on the C-64 or the C-128/C-128D in the 64 Mode.

Super Snapshot v4

The State of the Smart

The Cartridge Wars. For a while it was tough going — but we kept fighting to be the best. Now public opinion is unanimous, the Cartridge Wars are over — and Super Snapshot is the clear winner!

We've given Super Snapshot v4 enough capabilities to dazzle even the most demanding power user, but also worked hard to give those utilities a sense of style and grace.

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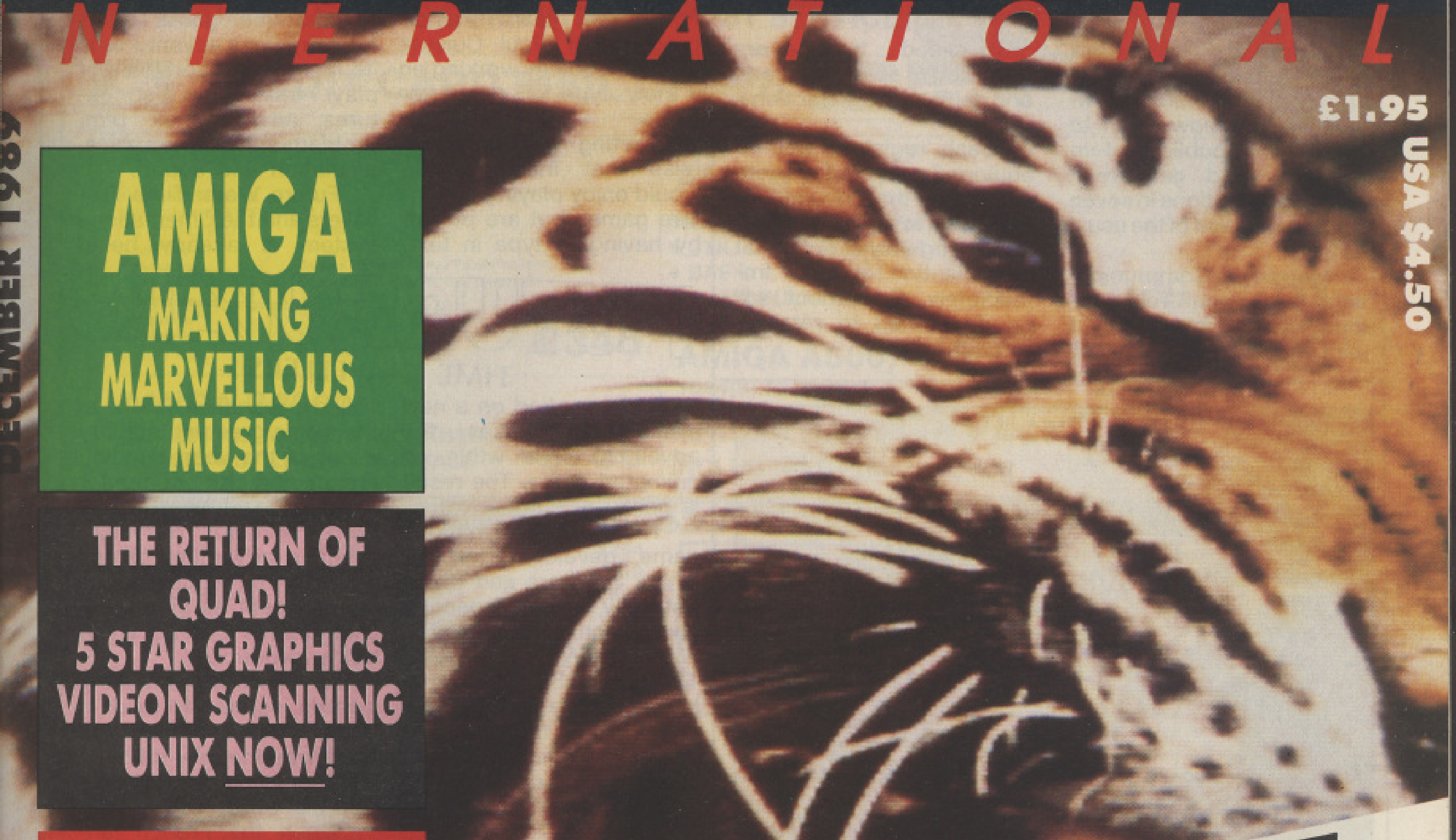

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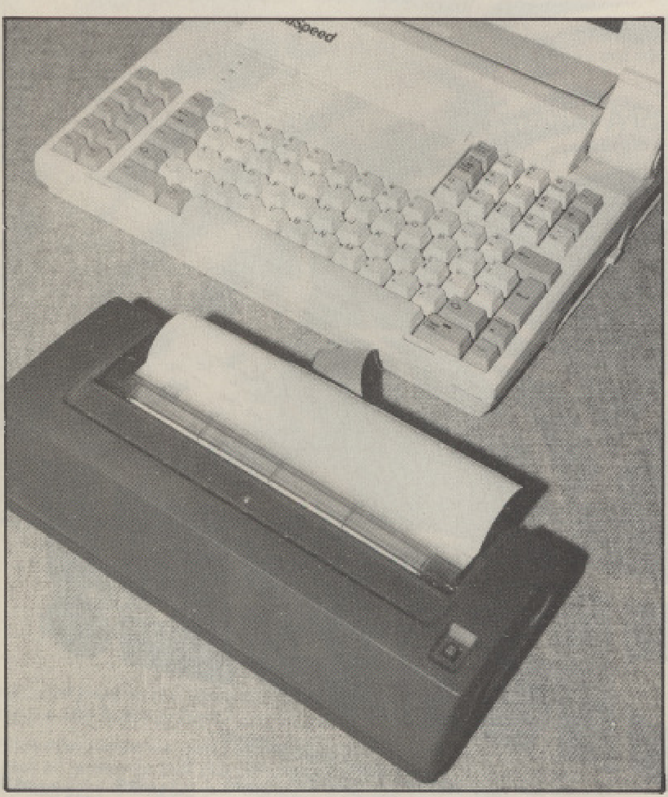
SEVEN SECOND SERVICE

U.K. banks and retailers will be offered, in the spring, a data communications service that will allow them to bypass the public dial-up networks and get credit card authorizations in seven seconds instead of the usual forty.

Mercury Communications and Racal Telecommunications have formed a joint venture, Paknet, to sell radio-based transceivers designed to speed up credit and debit card transactions.

Cash registers will be equipped with card readers and radios that transmit information to the bank or credit card agency to get credit authorisation almost immediately. Equipment will be distributed to retailers through banks.



MILK-TRAY SIZE PRINTER

Applied Systems Developments Ltd have launched a "truly portable printer for the move on the move".

With a rechargeable battery, or mains operated, including charger, and car cigarette lighter adaptor, the Personal 80 printer weighs in at under 1.5 Kgs (31b) including paper, and is extremely quiet in use, at less than 56db noise.

Its features include a speed of 80 cps, full 80 column width, and graphics capability. Self contained and compact (about the size of a 1lb box of Milk Tray), the Personal 80 is designed for "with the customer or in car use." Claimed as economical to run using thermal paper, no ribbons to wear out and replace, the printer retails at £159 plus VAT. Also available is a mains only version at a cost of £99 plus VAT. The price of both units includes 100' roll of paper, and a printer cable. Contact: ASDL on 0724 280222.

Taking Adventures Into The 1990s

FUTURE WARS
TIME TRAVELLERS

For three years French programmer Paul Cuisset has been quietly working on a new type of computer game.

Starting from the premise that many people would enjoy playing adventure games but are put off by having to type in text, Paul has worked on a new system that uses the adventure style wthin an animated game. The result is called CINEMATIQUE.

The first Cinematique game, developed for Delphine Software and distributed by Palace, is nearing completion and is titled... FUTURE WARS - TIME TRAVELLERS
In the 43rd century Earth is under attack from an alien race. The planet is well protected by a formidable SDI defence which the aliens cannot penetrate until... they hit on a plan... sabotage the defences before they are built by travelling back in time to plant delayed action bombs at strategic places!

Your adventure starts in the present day when, innocently attemting to avoid your boss at work you stumble across a secret passage thatbtakes you into the Middle Ages, Prehistoric Times, and the distant Future.

What it is claimed, sets a Cinematique game apart from previous adventures is its friendliness and ease of play. Future Wars also features an complex plot, problem-solving, graphics, animation and sound.

Future Wars: Time Travellers and the Cinematique system is already being hailed in its native France as the single greatest Industry event of the year. Leading French 16 bit computer games magazine Generation 4 has said: "The major event in adventure games this year is French. This is as intelligent as Sierra On-Line games but 20 times better produced."

At Europe's leading awards ceremony held in Paris in November Future Wars was the only game to have recieved two Tilt d'Or awards.

When the French language version of the game was released in France in mid-November it set a new record (previously held by Operation Wolk) as the fastest selling 16 bit game ever.

FUTURE WARS: TIME TRAVELLERS is now being released for the Amiga. A PC version is also planned for later.

In addition to the English and French versions, German and Italian versions are soon to be released.

Fastest Demultiplexing Chip

Researchers at Ruhr University in Bochum, West Germany announced that using Siemens technlogy (a self aligning polysilicon biCMOS process and 1.5 micron lithograph, you know what that means don't you?), they had developed an integrated demultiplexer thatr uns at 10C bit/s. By replacing the biCMOS with a present day bipolar only technology, the reasearchers claim they could push the bit rates to over 20 Gbits/s.

This kind of speed would open up the bandwidth in fibre optic systems, allowing faster data transmission rates. Faster rates on transmission can mean lower overall costs to end-users, bringing more end-users into the market.

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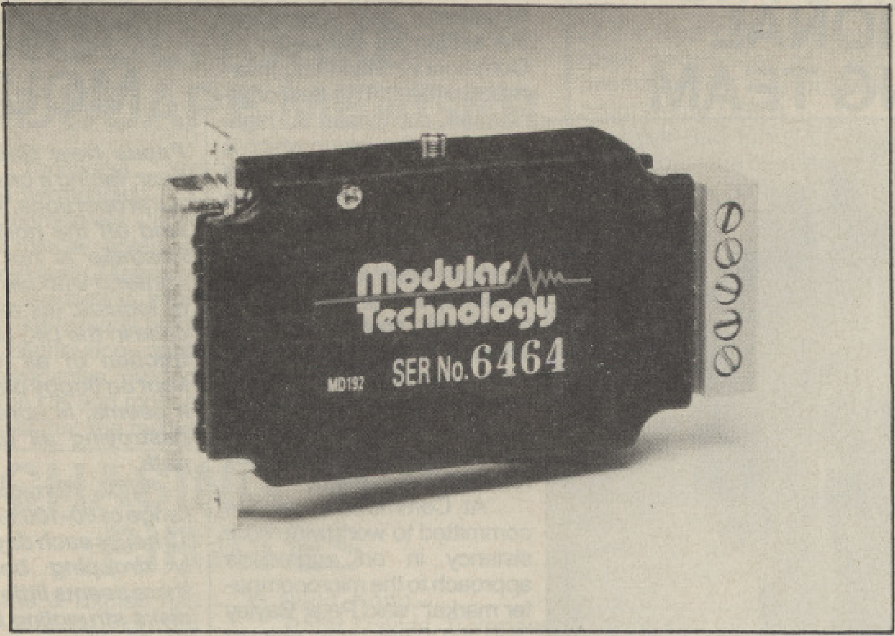


Modular Technology's Micro Line Driver is a compact, host-powered device that measures only 85 x 45mm and plugs directly into the computers I/O port. It allows transmission of RS-232 signals over a simple twisted-pair cable up to 1250 metres at a maximum of 19.2 Kbaud, and to greater distances at lower baud rates.

It features auto baud-rate selection, selectable DCE/DTE operation, and a screw terminal block for line connection. Unit price is £59.00, reuced to under £50.00 for quantity orders.

Contact: Action Computer Supplies, Abercorn Commercial Centre, Manor Farm Road, Middx., HA0 1WL. Tel:(0800) 333 333. Fax:01-903 3333.

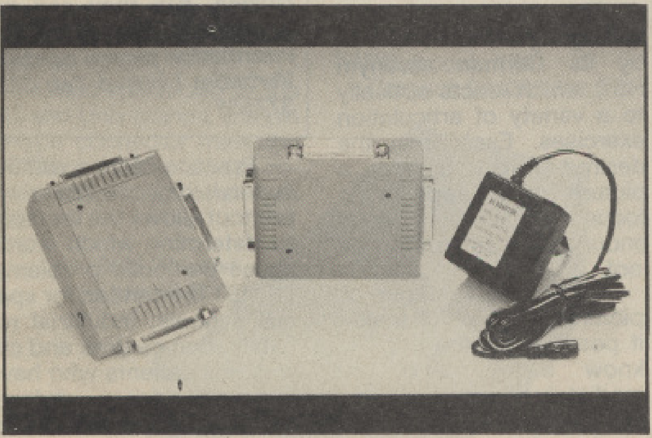
MINIATURE PARALLEL AND SERIAL T-SWITCHES

Adec miniature T-switches, available in both serial and parallel versions, share a single printer on a fully automatic 'first come first served' basis.

Both units have high-impact plastic cases, and are fitted with three female 25-pin D-type connectors. They operate independently of the operating system, and no special software or control codes are required.

The parallel auto-switch, which is supplied complete with a miniature mains adaptor, has an 8-second time out.

The serial auto-switch, which requires no power supply, offers RTS/CTS, DTR/DSR and XON/XOFF hand shaking, with DCE output. Price £77.90 Contact: Action Computer Supplies, Abercorn Commerical Centre, Manor Farm Road, Wembley, Middx, HAO 1WL. Tel: 0800 333 333.



THE MIDWINTER PROJECT

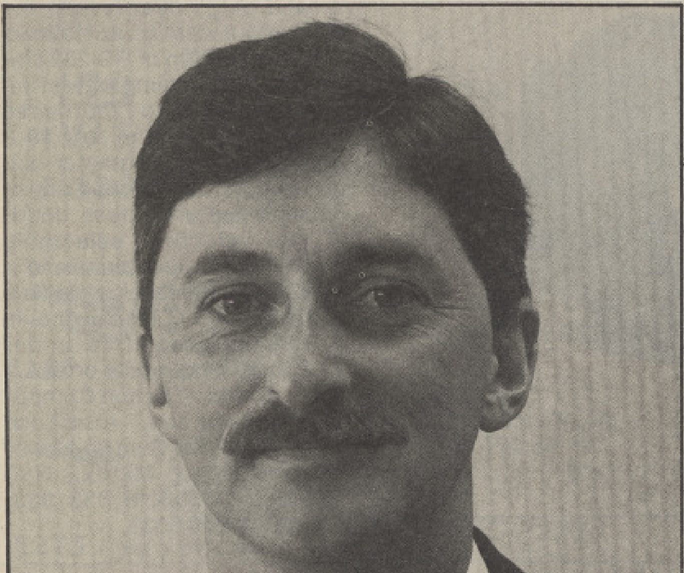
For the past eighteen months, Microprose have had under wraps a game which, they tell us, is completely original in concept and , revolutionary in design. The project is called "Midwinter", and is set, they proudly boast "to change the rules of computer gaming". (Not another 'ultimate' game?).

Concern for the future of the plantet's environment led Microprose to conside setting a game in the surroundings to be expected several years hence. ('Concern for the planet' if you believe that you will believe anything! Concern for the planet is not generally the reason why people sell computer games!). Extensive investigation and consultation with eminent professors and researchers unearthed an exciting discovery - the probability of an Ice-Ace within fifty years is alarmingly high. The gobal climate is balanced on a knife-edge, and with the correct trigger, a new ice-age will be detonated.

The reality of a worldwide freeze, as told to Microprose by Climatic Researchers and top scientists (we have not been able to find their names yet!), are that growing polar ice-caps will mean a drop in sea-levels and a consequential uncovering of millions of miles of land now forming the sea bed. With certain increase in volcanic activity, areas near the junctions of tectonic plates will be the sites for whole new outcrops of land, particularly where some ground already exists surrounded by sea. The islands of the Azores have been shown to be the region of the world most likely to be affected.

"Midwinter" is the story of what happens to the Azores when the next ice-age occurs. It tells of the colonisation of the new land and its development into a thriving ice-age community. What you will see is the present geography of the Azores, extended to form one large snow-covered land mass, faithfully duplicated on screen.

COMMODORE'S NEW INTERNATIONAL MARKETING TEAM



Peter Bayley, Marketing Vice-President of Commodore International, has announced the setting up in London of Commodore Marketing International (CMI). This new organisation comprises a high-level executive group which is to support the operation of Commodore's subsidiaries throughout Europe.

Bayley, who joined Commodore from Compaq last summer, himself fills the role of Managing Director and, with the remit to establish Europe's most powerful IT marketing team, has appointed five of the Continent's leading figures in their respective fields to key roles in his new team.

"At Commodore, we are committed to worldwide consistency in an aggressive approach to the microcomputer market", said Peter Bayley "and we have been able to choose from over 700 senior applicants, many from the world's leading IT corporations, to fill these key roles in our new corporate structure. We are putting new and coherent marketing strategies into place and will be providing a degree of support to our national subsidiaries which will enable each of them to take a stronger position in their particular markets."

BRAKING THE MOULD

Papua New Guinea is, we hear, facing a crisis of national proportions. This little island off the north coast of Australia is not having to contend with famine, floods or locusts, (as might be the case in the UK) but the destruction of all information kept on floppy disks. Mould, it seems, is spreading fast destroying all disks in its path.

With humidity in the range of 80-100% for at least 12 hours each day, and rarely dropping below 60%, there seems little respite for disks struggling to keep off the mould spots. For most disks, life expectancy has dropped to approximately 6-12 months but one brand closing to reach the ripe old retirement age of 20 months!

That brand is Datalife Plus. Produced by Verbatim, market leader in magnetic media, Datalife Plus is coated in teflon. Teflon coating is designed to protect vital data from office spills, but conclusive evidence say Verbatim from the tropics has shown teflon to be the only possible saviour against fatality from mould.

So if you have no other problems in your life, spend a little time thinking of the computer operators in Papua New Guinea. They need your sympathy... And thank you, thank you Verbatim for saving all that valuable data in Papua New Guinea. (Do they still eat people there?). For further information please contact: Verbatim Limited Tel: 0372 377555

Brother dot matrix printers

Three 24-pin Brother printers available from Action include an entry-level model at well under £300.00 and two more powerful machines.

Fastest is the 80 column model 1824, which prints at 225/327 cps draft and 75/112 cps letter quality. Features include a colour option, five resident fonts, a 64KB buffer, dual interface, and emulations for Epson LQ, IBM ProPrinter, Diablo and Brother HR. Action offers the 1824 at £469.00 (MRP £595.00) and the optional colour-ribbon control unit at £32.50.

Contact: Action Computer Supplies, Abercorn Commercial Centre, Manor Farm Road, Wembley, Middx, HA0 1WL. Tel:(0800) 333 333. Telex: 922493.

brother M-1824L

VISUAL SPEECH THERAPY

A grinning cat is helping people to enunciate words properly by appearing on a video screen when the word 'cat' is enunciated correctly.

Siemens has developed a language trainer, known by its German acronym RST, which reacts optically to a variety of articulation exercises. Each time the desired word is spoken, a picture of it appears in focus if it has been clearly enounced, less so if it has not.

There are 10 stages of picture clarity, which makes it possible for the pupil to know exactly and immediately how well or badly the word has been enounced.

Practice can be without supervision, because a printout allows the therapist to determine which words cause particular problems.

RST is intended for special schools, industrial rehabilitation centres and clinics, for patients who have suffered speech defects following operations or accidents.

SOFTWARE TOOLWORKS - MINDSCAPE MERGER

Software Toolworks and Mindscape two leading U.S. software companies have reached a merger agreement.

Geoffrey Heath, Managing Director of Mindscape International, which already holds exclusive distribution rights for both companies' product ranges in the UK and most of Europe, feels that the merger can only be of benefit to UK dealers and end users. "Now that virtually all our products will be published and distributed from a single source, we are better able to tackle the market strategically, to support dealers with a unified sales promotion plan, and to respond to the needs of the end user."

CHASING THE PIRATES

UK Customs & Excise has been urged to step up the fight against software piracy in the wake of one of the biggest crackdowns yet in Hong Kong. Hong Kong Customs seized illegal software worth $3 million in raids that resulted in 15 arrests.

Over 100,000 suspected pirated software manuals were confiscated from a syndicate that Customs believed accounted for two thirds of the supply of pirated software and manuals in Hong Kong.

Peter Davies, European legal counsel for Ashton Tate, called for more action from UK Customs. He said: "We hope UK Customs and other enforcement agencies will follow the excellent example of their Hong Kong counterparts and take the initiative against software piracy."

Currently, software companies are hampered by the different national laws that define copyright protection for programs.

MODEM MATCHBOX-SIZE

A matchbox-size modem is the latest offering from RAD.

A company called RAD claims their SRM-3D Modem, which measures just 61 x 31 x 19.8mm, is the world's smallest and is challenging anyone to come up with one smaller.

Aimed specifically at the PC and Unix market, a 9-pin D-type connector frees the RS232 port. The device remains fully operational even when only Transmit Data is connected and there are no control signals.

The SRM-3D has a range of 17 miles, operates at 19,200 baud, and takes its power from the PC.

Distributed in the UK by GADC, it costs £71.

Contact: 044282 8681

SRM-3D: small is beautiful?

DR T's TIGER CUB...

Dr T's Tiger Cub is the entry level sequencer of 1990 based on the very popular programme TIGER.

Tiger Cub is full of features which the manufacturer's claim is "unheard of in an entry level sequencer".

The sequencer section has 12 tracks with name and comments, large tape recorder type controls, resolution 384 ppq, cue points, full menus.

The editing section has full graphic real time editing a la Tiger. Velocity stems and note duration shown. Notes can be moved, edited and heard while the sequencer is running. Tempo map allows different time signatures to be used down to ticks. i.e. a bar can be 453 ticks long. There are discontiguous notes which can be selected for editing, instrument/drum maps can be stroed to disk allowing patch changes to show patch names.

Tiger Cub will run MPE modules, read/write midi files and show/print 12 staves onto a dot matrix printer.

There are many other features, the makers boast, that would put most professional packages costing 3 or 4 times as much to shame. Tiger Cub will be available for the Amiga early in the New Year!!!

Mitsubishi's Scanner

Mitsubishi is now delivering a MH216P scanning package which inlcudes an intelligent optical character reader (OCR) and enhanced image handling.

The company is bundling an A4 desktop or handheld scanner, a half-length PC interface card and software running on Microsoft Windows. The system requires a PC/AT compatible with a fixed disk, and a minimum 640K of RAM.

The scanner uses yellow green illumination to offer quality scanning from colour originals as line art of half tone modes.

The OCR recognises Courier, Helvetica, and Times Roman, but it has a learn facility allowing it to recognise other fonts.

Columns of numbers can be scanned and imported into Lotus 1-2-3 spreadsheets as column ranges and editable text for word processing applications.

The MH216P offers pixel and paint, and cut and paste modes and digitises an A4 document in 10 seconds.

The price of entire scanning package is £559. Contact: Mitsubishi (0707) 276100.

LISTEN AND LEARN VENTURA

Many small businesses have invested in expensive desktop publishing tools like Ventura, only to find that while the results are excellent, the training involved is just too time comsuming. Intouch Tutorials has released Listen and Learn Ventura Version 2.0, an andio-based tutorial which provides eight lessons of basic instrution and is designed to cover beginner to intermediate functions, giving the user a general understanding of Ventura in just a few short hours.

"Ventura is a rather complicated program and can be a bit intimidating to people who are not acquainted with desktop publishing", said Lorraine French, Intouch UK's General Manager. "In just a few short hours you will achieve a basic understanding of Ventura, and build the confidence needed to make use of the multitude of functions in this program - all at a fraction of what it would cost to receive the same training through traditional methods". The RRP for Intouch's Ventura 1.1 and Ventura 2.0 is £99.00. Tel: 0734 772911

I·C·P·U·G

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What you can do with a 64.

The 64 is a toy. It is a games machine. Its fun for at least a month. Then it cleverly fills an empty corner in your bedroom cupboard. It can fit under the old table in the loft too. Finally it can be advertised in the Classified Advertising columns of CCI or prove useful as a doorstop.

Well, it is a toy and a games machine but not just that. And if it is used only as a toy then probably it will only last for a month or two and the other nasty things that happen to it generally follow.

What a 64 can do is open up a magic box which is full of fascimating goodies. It is a big, room-sized, even world-sized box to which the word "Ready" is the key.

Yes,of course, if you are new to the 64 world, you have probably got the computer firstly to enjoy its pure entertainment value - the games you can play on it. But there is a lot more entertainment built into that little Commodore box than just games.

We gave a taste of that last month with a review of a classic wordprocessing program called "Wordstyle" which can be run from a cassette.

But there are all sorts of activities, and wordprocessing is just one and possibly the most basic, which you can do. And this month, we are starting a series to help you get the most out of your new companion. Even if you have had it for some time, you will find in this series there will be ideas that you almost certainly not have tried.

This month, we are starting with two projects. One helps you build a robot and the other lets you give your 64 sight. They aren't exactly mindblowing but fun, especially if you follow the simple instructions and get it right.

When it comes down to it, the 64 is both brilliant and stupid. It can perform tremendous calculations at amazing speed. It can also stubbornly refuse to do the simplest things, if you have given it even the tiniest incorrect instruction. And then you can feel like kicking it across the room right into that cupboard but remenber GIGO - Garbage In, Garbage Out - so don't blame the computer!

It can also be knockout company and let you use all that creative genius inside you that's just bursting to come out. Who knows, it could even make you famous and a fortune - from all those other avid game players or adoring pop music fans.

What can you do with your 64? You can make it play, talk, write, draw, paint, count, practically sing and dance. You can almost make it come alive. Now that's not bad for a start, is it?

WHAT YOU CAN DO WITH A 64

BUILD A ROBOT MOUSE

A Project that shows you all you need to know on the circuitry and software required to build and control a robot rodent

The idea of building a computer controlled robot is very appealing. What usually stops people creating such machines is the design and construction of the hardware. Building robots requires a range of different skills: computing for the control software, electronics for the control software, electronics for the control hardware and mechanical construction to build the mechanical base of the machine. To simplify these problems the robot design should be kept as basic as possible. The simplest form of robot is the mobile or "turtle" robot.

A turtle robot has a very simple mechanical base and consists of a rectangular perspex plate to the front end of which are attached two small five volt DC motors. These motors directly drive small model airplane wheels. In the centre of the rear end of the plastic base plate is a small furniture castor.

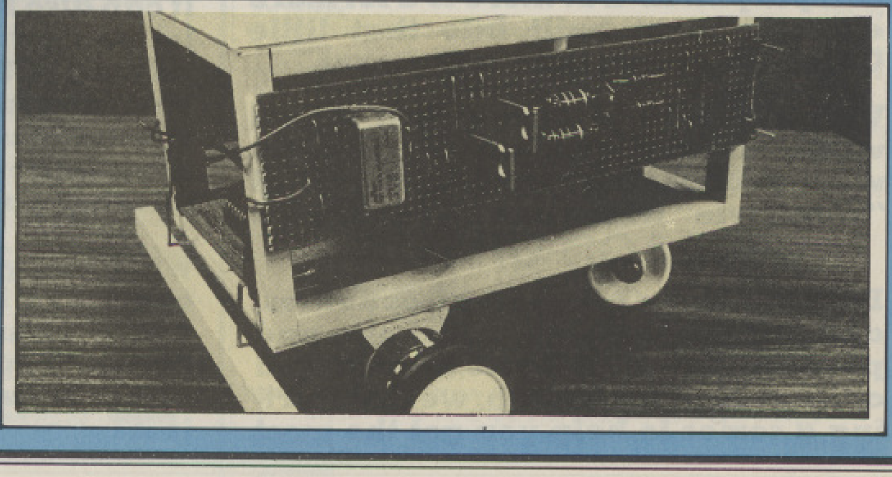
The construction is very simple and for a few pounds all the mechanical parts can be bought from a model shop (except castors which are purchased from hardware stores). Construction tools were confined to a sharp knife, a small hacksaw, a ruler, and plastic cement.

Having constructed a mechanical base, the next stage is to build the motor drive electronics. These are relatively simple to construct and the dedicated experimenter will find the circuits useful for controlling a whole range of power devices.

The simplest and cheapest type of robot motors are the small, low-voltage DC motors sold in model shops. Such motors usually run on five or six volts at 750 milliamps and can thus be conveniently powered by a rechargeable battery onboard the robot. Small DC motors with integral gear boxes which are preferable for robots, can be hired.

Two controls are required for a DC motor - speed and direction. Speed can be controlled by changing the supply voltage, and direction of rotation by switching the polarity of the motor power supply. In order to perform both these functions we need a simple switch circuit which will allow the computer to control the DC load in a small motor. Additional circuitry is also required to protect the computer if high voltages are used.

A basic circuit configuration for switching small DC loads is shown in Fig 1. These loads cna range from five to 25 volts with current consumption of several amps. Such a circuit can be used not only for controlling DC motors but also relays, solanoids, lamps and stepper motors and is therefore an invaluable basic circuit for the experiment. This circuit is, of course, not the only way of



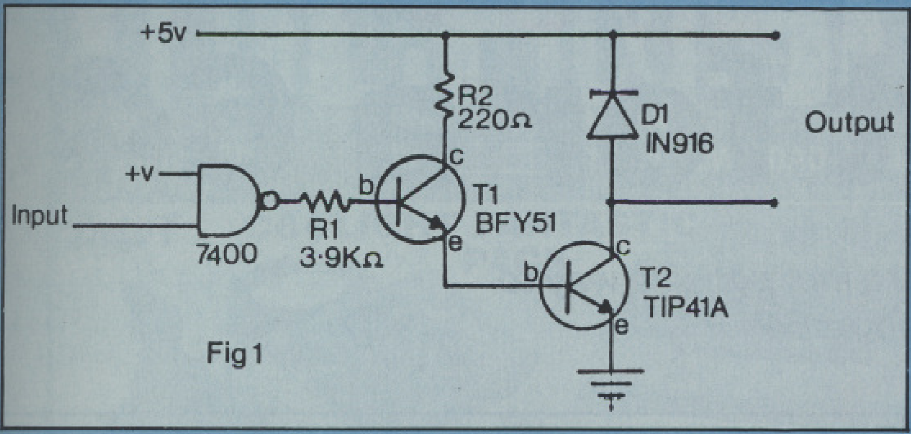


Fig 1

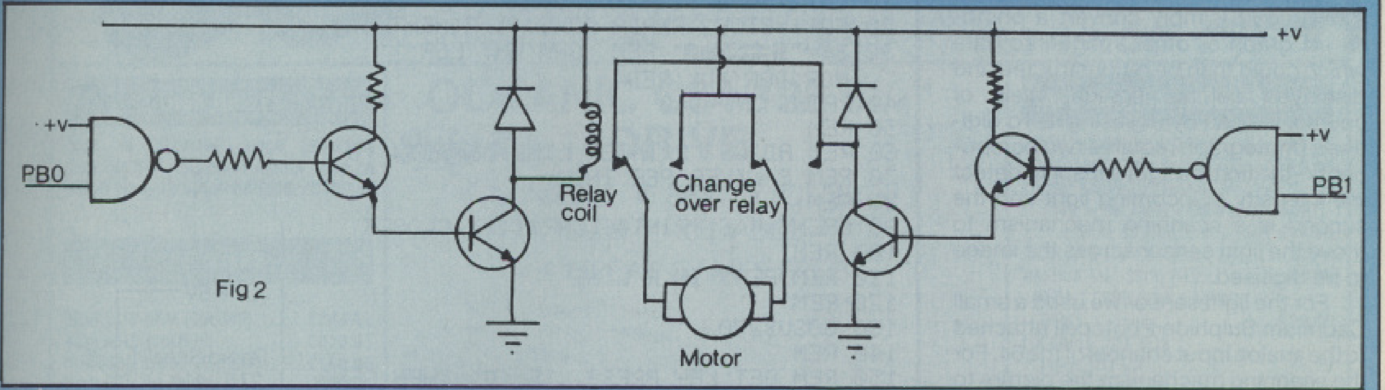


Fig 2

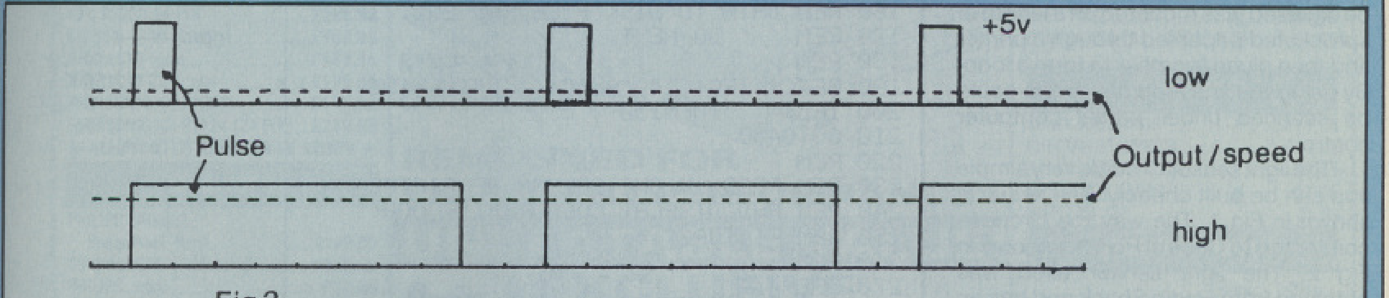


Fig 3

performing this function - solid state relays offer an excellent method with the benefits of optoisolation, ease of driving by a computer I/O port and both fairly high load switching and response frequency. They are, however, still fairly expensive.

The basic operation of the circuit is quite simple. When the output of the 7400 inverting gate rises, the emitter of transistor T1 rises to the same voltage as its base. Current then flows through the circuit limiting resistor R2 and T1 into the base of T2. While the base of T2 is held more than 0.8 volts above its emitter, the device will conduct. Current can then flow through the load. When the output of the 7400 drops to logic 0, then the emitter of T1 also falls to a low voltage level and T2 ceases to conduct.

The power transistor used in this circuit TIA41A has the disadvantage of a low current gain. This means that if it is to pass a large current through its load then T1 must supply a smaller, but still high current to its base. The resistor R2 is placed in the circuit to prevent excessive current flowing through T1. If the TIP41A is used then the load should not be more than one amp. For large loads the 2N 3055 can be used to replace the TIP41A and the value of R2 can now be reduced to 10 ohms. Since this transistor has a higher current gain, current loads of several amps can now be switched. It should be added that many devices with inductive loads, such as motors and relays, produce spikes of back emf. These could damage the circuit components, and therefore diode DI is included to protect against this.

To control a small DC motor, two of these circuits were built on a single printed circuit board and the inputs to the 7400 connected to two output lines of the computer. One of the circuits is used to energise the coil of a double pole changeover relay, the function of which is to reverse the motor's polarity and therefore its direction of rotation.

The method of connection is shown in figure 2, this is the complete motor control circuit. The second circuit controls the power supply to the motor, switching it on or off. The motor can now be directly controlled by the computer via the connections between the circuits and the I/O ports.

Since these currents only switch the motor on and off, the motor's speed is controlled by a technique known as pulse-width modulation. Here the motor is turned on for a period and then off. The ratio of on and off times determines the speed of rotation. If these time periods are very small then the mechanical inertia within the motor will cause the pulses to be smoothed out and the consequential integration gives a varying motor supply voltage and therefore speed. This is diagramatically shown in figure 3. A program to control the speed of a DC motor is shown in figure 4.

```
C000   A940     LDA   #$40
C002   8D03DD   STA   $DD03
C005   A200     LDX   #$00
C007   8E01DD   STX   $DD01
C00A   E8       INX
C00B   E4FB     CPX   $FB
C00D   D0FB     BNE   $C00A
C00F   A940     LDA   #$40
C011   8D01DD   STA   $DD01
C014   E8       INX
C015   D0FD     BNE   $C014
C017   A505     LDA   $C5
C019   C940     CMP   #$40
C01B   F0E8     BEQ   $C005
C01D   60       RTS

10 SYS49152
20 GETA$
80 POKE251,VAL(A$)*25+1
40 WAIT197.64:POKE198,
   0:GOTO10
```

continued from page 19

Sight for a 64

A Project that shows you a inexpensive way to digitise a photograph using a 64 and your printer

How wonderful it would be if one could simply convert a photograph or other image into data which could then be reconstructed and displayed on the screen. Well, of course, we can by digitising it. To digitise a photograph requires two components - the first is a light sensor to detect the intensity of incoming light and the second is a scanning mechanism to move the light sensor across the image to be digitised.

For the light sensor we used a small Cadmium Sulphide Photocell attached to the analog input channel of the 64. For the scanning mechanism the picture to be digitised was mounted on a length of sprocketed paper fed through a printer and then glued together to form a loop. By using the line feed the image could be scanned under partial computer control.

The light sensor circuit is very simple and can be built cheaply. The circuit is shown in Fig 1. The way the circuit is connected to Control Port 2 is shown in Fig 2. The light sensor used was obtained from Radio Shack and has an optically active area of only about 3mm diameter, this small size is essential for good resolution digitisation. An optical fibre light guide could be used to improve this resolution, but for most applications a 3mm resolution is adequate.

The loop of paper in the printer to which the image is attached is moved using the line feed command. The printer we used has the useful feature of being able to vary the line feed paper increment. This allows the selection of the appropriate digitisation step size.

The Photocell is mounted on a bar traversing the paper and about 2mm from its surface. It is essential that there is a good source of light directly above the printer. The bar and Photocell mounting are constructed in such a manner so that it can be manually moved in a horizontal direction across the paper. The image is thus scanned under computer control one vertical stripe at a time. The Photocell is then moved manually by the digitisation increment and the process repeated.

Here is the program that reads the data from the eye and stores it away.

```
 10 C=12*4096:DIMA%(50,50)
 20 FORI=0TO63:READA:POKEC+I,A:NEXT
 30 B$="[illegible]":REM 'GRN'WHT'LGR'
   'MGR'DGR'BLK'RED'
 40 PRINT"Ↄ";:D=0
 50 REM
 60 REM ADJUST PRINTER LINE DENSITY TO
 70 REM 8 LINES PER INCH
 80 REM
 90 OPEN6,4,6:PRINT#6,CHR$(18):CLOSE6
 100 REM
 110 REM READ IN A LINE
 120 REM
 130 GOSUB270
 140 REM
 150 REM GET KEY PRESS, IF 'D' THEN SEND
 160 REM DATA TO DISK FILE AND END. IF
 170 REM ' ' DO NEXT.
 180 REM
 190 GETC$:IFC$<>" "ANDC$<>"D"THEN190
 200 IFC$=" "THEN130
 210 GOTO400
 220 REM
 230 REM READ IN ONE COLUMN OF PICTURE
 240 REM AND DISPLAY COLOURED 'ROUGH'
 250 REM PICTURE
 260 REM
 270 OPEN4,4
 280 FORI=0TO50
 290 PRINT#4
 300 REM
 310 REM PAUSE TO ALLOW TRUE READING
 320 REM
 330 FORJ=0TO300:NEXT
 340 SYSC:P2=PEEK(C+258)
 350 PRINTLEFT$(B$,((P2+2)/6)-1)"◪ ■";
     :A%(I,D)=P2
 360 NEXT:D=D+1:PRINT:CLOSE4:RETURN
 370 REM
 380 REM SEND DATA TO DISK FILE AND END
 390 REM
 400 OPEN2,8,2,"@0:PIC,S,W"
 410 FORJ=0TOD-1:FORI=0TO38
 420 PRINT#2,CHR$(A%(I,J));:NEXT:NEXT
 430 CLOSE2:END
 440 REM
 450 REM DATA FOR M/C ANALOG PORT READER
 460 REM (FROM PROGRAMERS REFERENCE GUIDE)
 470 REM
 480 DATA162,1,120,173,2,220,141,0,193,169,192,141,2,220,169
 490 DATA128,141,0,220,160,128,234,136,16,252,173,25,212,157
 500 DATA1,193,173,26,212,157,3,193,173,0,220,9,128,141,5,193
 510 DATA169,64,202,16,222,173,0,193,141,2,220,173,1,220,141
 520 DATA6,193,88,96
READY.
```

Here is the program that reads the data from the eye and stores it away

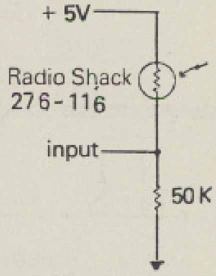


Fig 1

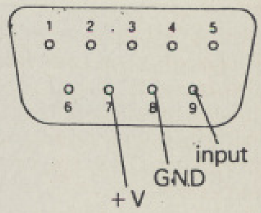


Fig 2

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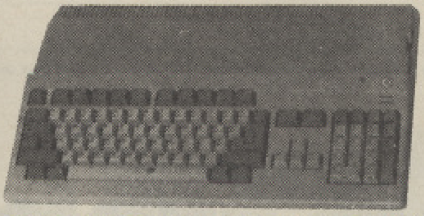

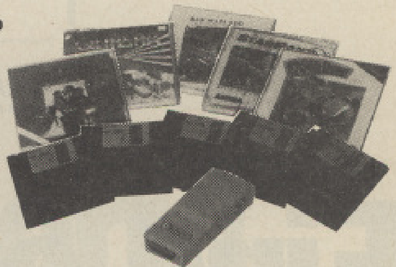

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Compunet's New Network Access

In last months 'Inside Info' I described how Compunet had lost its access to Istel's UK-wide network. Things are now looking up for Compunet with the imminent arrival of a new means of local access for the whole of the UK.

During the last month Compunet has only been available on local call basis for those users in the London area. Others have had to pay longer distance phone rates to access the system via a London phone number. When Compunet was using the Istel network for access nearly all users in the UK could access Compunet at the cost of a local phone call by ringing their local Istel node.

The temporary loss of many of the system's users has naturally led to a drop in the rate of new uploads. During the first month of the problems there was still a lot of activity, and much to read in the on-line database.

Compunet management have announced that they are negotiating with Fastrak to supply local network access across the UK. Fastrak is the network system run by Midland Bank and already used by a number of other services. Its eighty-eight nodes have spare capacity, especially in the evenings, when Compunet experiences its peak loadings.

Access through Fastrak opens up some exciting new possibilities for Compunet users. Currently most users access the system through 1200/75 baud modems. These allow the transmission of approximately 120 characters per second from Compunet to the user's machine and about seven or eight characters per second back to the Compunet machine. Because of the data compression used by the Compunet terminal software and the fact that most users spend most of their time downloading from the system this performance is adequate for the majority of users.

For those wanting to upload large files to the system seven or eight characters a second throughput means that large phone bills are a fact of life. Some users, however, already have the option of using 1200/1200 baud access which brings the upload by sixteen times.

With the introduction of access through Fastrak it will be possible to communicate with Compunet at 2400 baud, or approximately 240 characters per second in both directions. This rate will, of course, only be available to users with suitable modems.

The Compunet terminal software that runs on the users C64 or Amiga automatically logs into the network used by the system and sends the relevant commands to make the access through the network invisible to the user. With the change of network the software will need to be upgraded.

Commodore C64/128 users will only need to download a configuration file to setup their software for the new system. Amiga owners, however, will need to download the complete package again.

With a little luck Compunet will be available through its new network by time you read this. To check logon through the London number (01-997 5422) and GOTO TODAY, where the latest system news can be found.

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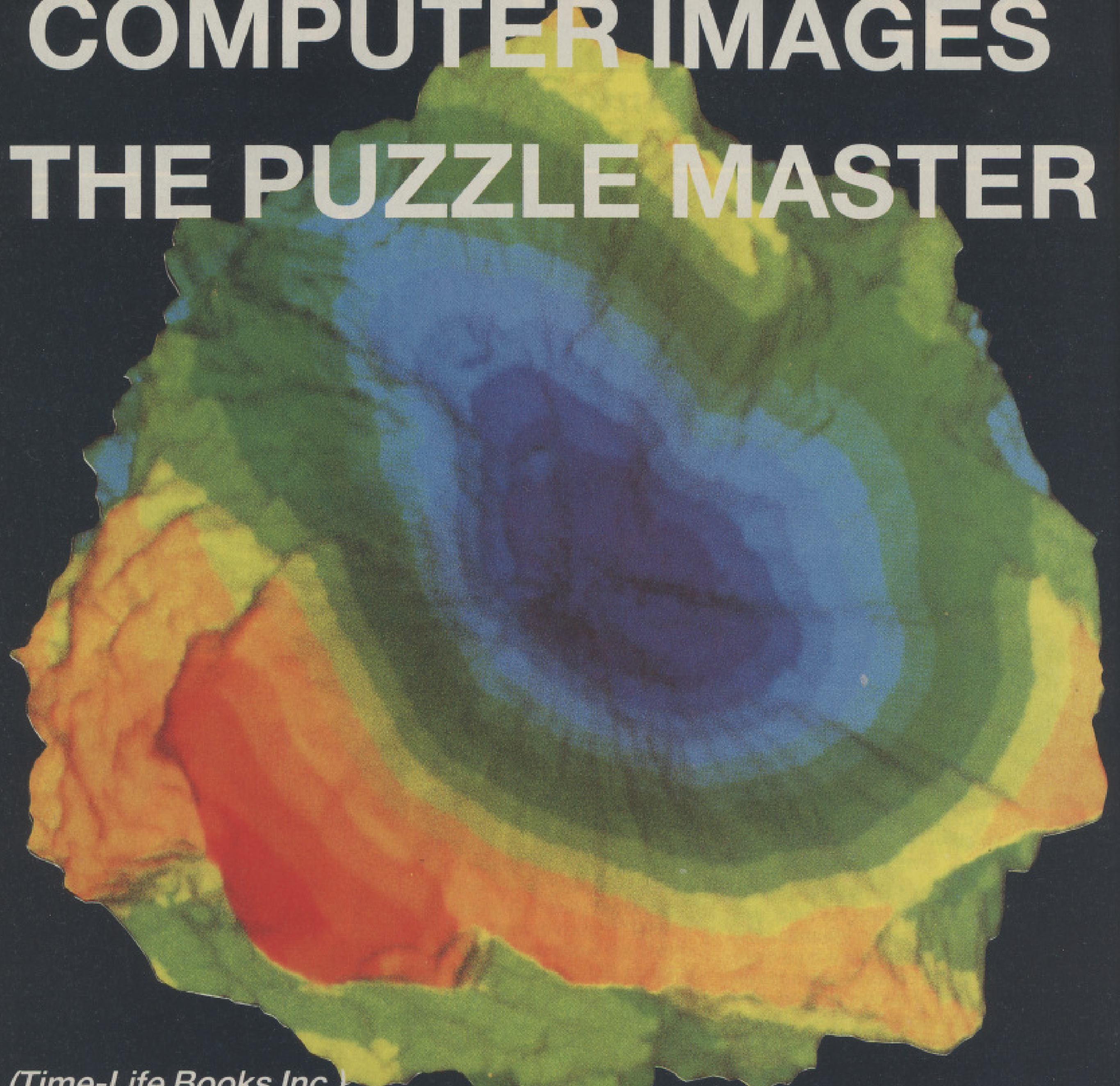


(Time-Life Books Inc.)

Time-Life Books new series is called 'Understanding Computers'. So far there are three volumes, The Chipmakers, Computer Images and The Puzzle Master, and they aim to examine various aspects of computer technology and the roles computers play in modern life.

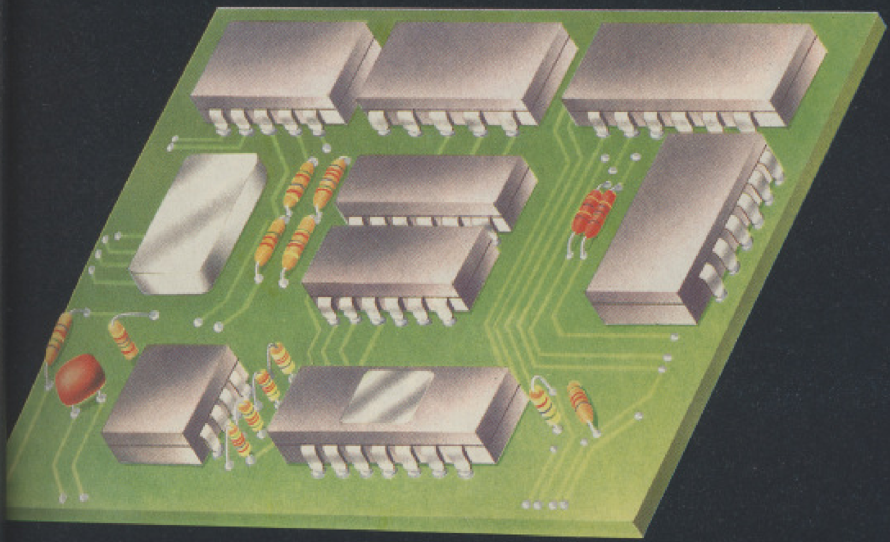
For anyone who would like to know just what a microchip is, how it came about, and why it is able to do the things it does, The Chipmakers is the book to buy.

The microchip, invented in 1958, did indeed change the world. It has enabled man to do things as diverse as walk on the moon, have a table top computer in his own home, and tell a television to record one programme while he watches another.

Between 1963 and 1966 chip production quadrupled every year and by the time the lunar lander Eagle touched down on the moon, on July 20th 1969, the Apollo program alone had purchased more than one million chips.

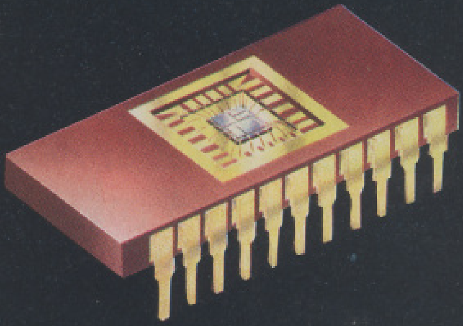
The illustrations in this volume are an eye-opener. They are all enlarged to enable the reader to comprehend the inner workings of chips more easily. And what a strange and wonderful world they reveal.

A personal computer motherboard looking like a miniature industrial estate, the surface of an EPROM (erasable



One Chip per Package

This small circuit board, used in the early 1970s



The Works on One Chip

A decade later, the circuitry needed to perform the same functions as the circuit board

programmable read only memory) chip which resembles sugar cubes interlaced with clouds and a microprocessor which makes Hampton Court maze look like a straightforward walk.

For the more technically-minded there are chapters on chip bonding, master plans for wiring a computer and how the circuit pattern is sculpted.

Computer Images is, as you might guess, all about graphics. If the illustrations in The Chipmakers are good those in Computer Images are spectacular.

Computer imagery is not just an aid for architects and designers, nor is it there merely to make game-playing more interesting. It can actually save lives by enabling doctors to look inside the body to diagnose disease. With pie-charts and bar graphs companies can plan long term strategies with a degree of accuracy never before known, thus aiding the economy. (We hope!) And who has not been astonished by the stunning graphics in films such as the Star Wars series and a multitude of other science fiction movies?

Computer Images takes the reader behind the scenes to show how many of the graphics are produced and an intriguing look it is, too.

I once watched a computer operator bring to the VDU, in a matter of a few minutes, a complete three dimensional, multi-coloured, image of Magellan, the deep space satellite. The operator could zoom inside the probe and home in on the interior of any of the small compartments Magellan contained or pull out and view the satellite as a whole. He could pull down windows and see several parts at once.

I had no idea at the time how the image came to the screen. I just marvelled at the picture. Now, because of Computer Images, I have a better knowledge of the complicated processes that are necessary to form graphics such as these.

The third book in the series, The Puzzle Master, explains how some of the enigmas that have tested mankind for centuries can now be solved with the aid of computers.

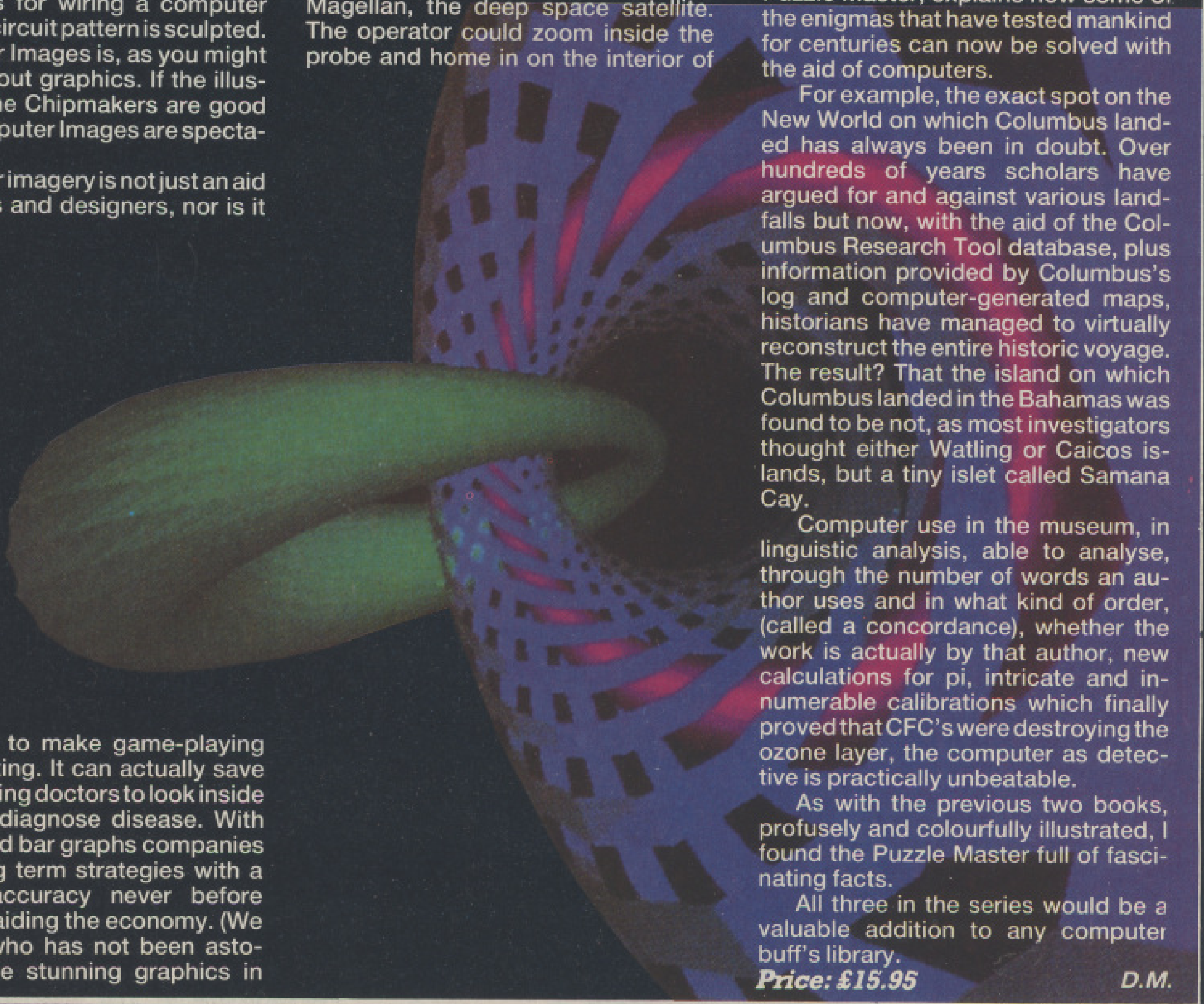
For example, the exact spot on the New World on which Columbus landed has always been in doubt. Over hundreds of years scholars have argued for and against various landfalls but now, with the aid of the Columbus Research Tool database, plus information provided by Columbus's log and computer-generated maps, historians have managed to virtually reconstruct the entire historic voyage. The result? That the island on which Columbus landed in the Bahamas was found to be not, as most investigators thought either Watling or Caicos islands, but a tiny islet called Samana Cay.

Computer use in the museum, in linguistic analysis, able to analyse, through the number of words an author uses and in what kind of order, (called a concordance), whether the work is actually by that author, new calculations for pi, intricate and innumerable calibrations which finally proved that CFC's were destroying the ozone layer, the computer as detective is practically unbeatable.

As with the previous two books, profusely and colourfully illustrated, I found the Puzzle Master full of fascinating facts.

All three in the series would be a valuable addition to any computer buff's library.

Price: £15.95 D.M.



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BILL, THE GALACTIC HERO ON THE PLANET OF ROBOT SLAVES

By Harry Harrison
(Victor Gollancz £11.95)

Harry Harrison is one of science fiction's most prolific writers. Short stories, novels, series, have all flowed from his pen since he started writing nearly forty years ago. He has also edited many SF anthologies and in 1972, with Brian Aldiss and Leon E.Stover, founded the John W.Campbell Memorial Award for the best SF novel of the year. This award, which is still going strong, is highly prized because it is given by a jury which includes professional critics and academicians as well as authors.

Perhaps best known for his Deathworld and Stainless Steel Rat series, Harrison has always had an acute sense of the ridiculous and it showed up particularly well in Bill The Galactic Hero, which first saw the light in 1965.

Bill was a satire on warmongering and, though well thought-of in some quarters, was not an unqualified success. That might have been because the 60's was a time of more biting satire and Bill poked gentler, though just as wicked, fun at the bringers and profiteers of death.

Harrison must feel the time is ripe for another go at them for the saga of Bill now continues and in The Planet Of Robot Slaves Harrison goes back to his theme of war as a tool used by governments to keep themselves in power.

Bill, for those of you too young to have read the original story, was a farm boy who was drugged and then tricked into enlisting with the Space Troopers who were, at the time, fighting a war against the Chingers, a race of intelligent aliens, who resembled little green lizards. During the course of one of the battles Bill was injured, had his left arm blown off and blew his own right foot off to avoid being returned to the frontline.

At the start of this sequel Bill has had a new arm sewn on. Unfortunately, they only had right arms to spare so he now has two good right arms, one black and one white, and they have replaced his missing foot with the only thing they had to hand - or should it be foot? - a giant mutated chicken claw. O.K. for digging up worms but not much use if you want to play football.

Oh, and to top it all, Bill's old drill instructor has died and left Bill his three inch long tusks but Bill can only afford to have one implanted so he is desperate to earn enough money to allow the other one to be inserted as well.

What is the story about? Bill and his companions, Admiral-Doctor Mel Praktis, Megahertz Mate 2nd Class Cy Berpunk and Engine Mate 1st Class Meta Tarsil are sent off in a garbage disposal space ship, the 'Imelda Marcos', under the command of Captain Bly, to find the planet from which their old adversary the Chingers are launching bomb-laying, fire-spraying, flying dragon machines. (Don't ask why a garbage disposal ship is sent, just accept that it is).

The space ship crashes on the planet Usa which is inhabited only by intelligent, if you'll pardon the expression, machines ruled by a golden metal, four-armed, roughly human figure, named Zots.

Bill and his fellow spacers are involved in numerous adventures with a metallic aide called Fighting Devil, which has an inbuilt armoury of guns, spikes, grenades, ray guns and several other hidden death-dealing devices. Fighting Devil, although useful to have around when in trouble, is imbued with just one idea - to fight and continue fighting even when peace, a word it abhors, is declared.

Harrison's sense of the absurd is keen and he manages to put into the mouths of his hero and others in the story his abhorrence of war and warmongers without letting up on the humour.

Science fiction writers, as a whole, prefer writing drama to comedy and it is a welcome change to read a story that brings a smile with it.

As with Bill the Galactic Hero, I don't think it comes off all the time, I found a chunk about a Usan King Arthur which became slightly boring towards the end. But Bill, I can see, has a long, full and amusing life ahead of him. And as a variation from the usual deadly serious SF story I can recommend this episode.

D.M.

Artificial Intelligence Projects for the Commodore 64

by Timothy J O'Malley
(TAB Books Inc., USA $12.95)

If you are tired of ordinary computer games, if you are looking for something exciting and different to do with your 64, here is the answer! It is a whole collection of artificial intelligence (AI) projects designed to tap your micro's real problem-solving capabilities for both practical and entertainment applications.

Leading off with a definition of artificial intelligence and an overview of AI concepts, the author provides 16 ready-to-run programs in BASIC to illustrate your micro's cognitive powers. You will cover tree searches (testing all possible solutions to a problem), hueristics (a modified trial-and-error technique), algorithms, and pattern searching/recognition routines.

You will find out how to solve simple, and not so simple, puzzles like Towers of Hanoi and the Knight's Tour of the Chessboard, explore concepts of animal behaviour and how it can be simulated, analyze how natural language can be recognized and acted on by the computer, simulate an actual human-machine conversation and use an interactive routine that allows your 64 to make deductions through clever application of set theory. There is even a program that allows your micro to write its own program modifications! And, as an extra bonus, the author has included a functioning word processing program (which he used to write the book's manuscript) and a graphics program that lets you draw on the screen with a joystick.

This book is written for both the beginner and the seasoned programmer. The beginning programmer can run the programs even though he or she may not understand all of the operations and techniques involved. The experienced programmer will find some surprises, mostly in the ways of approaching problems and in the ways BASIC statements can be arranged.

Fascinating and packed with techniques that will help you improve all your BASIC programming practice, this is a sourcebook that will open a whole new dimension in your computer usage!

A.M.

More Power For The 64

Alive & Kicking

Do you buy CCI only for the editorial material? Big mistake, says Peter Gerrard, examining the advertisements, they are a treasure trove!

People have been predicting the demise of the Commodore 64 for more years than probably even Commodore would care to remember, and yet our good friend is still with us and still, as the title of this article reminds us, alive and kicking. I would imagine that more 64s would die of old age than would ever be sold on the second-hand market, perhaps unjustly neglected in a cupboard somewhere when they are perfectly capable of carrying on and delivering the goods.

A trundle through a recent issue of Commodore Computing International reveals the truth behind this theory, as there are many purveyors of both software and hardware continuing to supply us with new and interesting products for the 64. There are also many OLD and interesting products whose use might not have been considered when you first acquired your computer. In no particular order of merit, although I must confess that the order chosen is roughly back to front in the particular issue of CCI that I was looking at, me being the sort of person that flips through a magazine (and newspaper!) from back page to front page before settling down for a more protracted read in the opposite direction, let's take a look at just some of the things that are currently available for our favourite computer.

Some you may have seen before, some you might use almost daily, but others may have passed you by. I hope there's something for everyone. To coin an apt phrase of Robert Louis Stevenson: "Everyone lives by selling something". Well, these suppliers are all selling things and are all presumably living quite happily, so we know that there must be life in the old 64 yet.

On the back page of many a recent issue of CCI we see the advertisement for Emlyn Hughes' International Soccer. Whatever your opinions of the man himself (mine are not high, I must confess) the game itself is an all-time classic which still stands up in its original International Soccer cartridge disguise. Available from Audiogenic and selling by the bucket-load, no respectable game playing 64 owner should be without one. Come to think of it, every 64 owner should own a copy, so that they have a chance to play one of the best selling games of the 1980s and probably the early 1990s as well. Not for nothing did it gain a CCI Oskar as Best Game of the Year.

Moving in a few pages, so that we start going in the pink, there are a number of advertisements from people offering to repair your computer, should the worst ever happen. 64s do go wrong occasionally, it has to be admitted, and the sight of half a dozen adverts at least (throughout the whole magazine) offering to come to your aid should anything happen is a good sign that the 64 market remains a healthy one. There'd be no point in repairing the machine if this wasn't the case, and the fact that so many people are willing to repair yours is what we refer to as A Good Thing. Touch wood (or plastic keyboard, as the case may be), my 64 is still at the peak of physical fitness, but it's nice to know that there are plenty of places to turn to should things go awry.

I told you there was no particular order to this! The next thing that caught my eye was an advertisement from Megaland, who seem to sell everything. Apart from headings like Commodore C64 and Epson Printers, they finally had to resort to the superb heading of Other Things for all those goodies that wouldn't fit in anywhere else. They don't only sell 64 stuff of course, but they do provide some interesting items to make you think "should I buy this?"

What made me look at the advert was the section on Star Printers, and the sight of the LC10 colour printer on sale for £195 (or as near as makes no difference). Having recently had my hands on one of these beasts I can assure you that they're a bit like Volkswagens: once driven, forever smitten. You can connect them up to the 64 quite easily, controlling the colours from Basic is a mere bagatelle, and it makes such a difference to the final output of any document you might happen to be printing. It's also good fun, although that is a secondary consideration. More subdued readers may care to look at Epson printers instead. Arab oil sheiks could also select a laser printer (I can see at least three in the advert) and boggle at a printing speed of 8 pages per minute. My own printer's just started sulking!

I've mentioned computer languages before in this section, although it's good to see an advert from just one supplier who will cheerfully allow you to choose from any one of about eight different languages, plus what appears to be a Basic extension and an assembler/monitor. All this is for the 64, I kid you not. Adamsoft are the company, and they've been around long enough for people in the business to know that they are a fine bunch of people to deal with, always helpful and courteous. If you fancy dabbling in foreign tongues then you can take your pick from Pascal, C, Cobol, ADA, LOGO, Fortran, Forth or Pilot, and there are even different versions available for some of the languages. Enquire within, as they say, and if you're at all interested in learning to drive your 64 in another computer language then just look up Adamsoft's advert and write off for details.

Four adverts, four totally different areas for the average 64 owner to explore, and they say that 8 bit machines are no more? No chance!

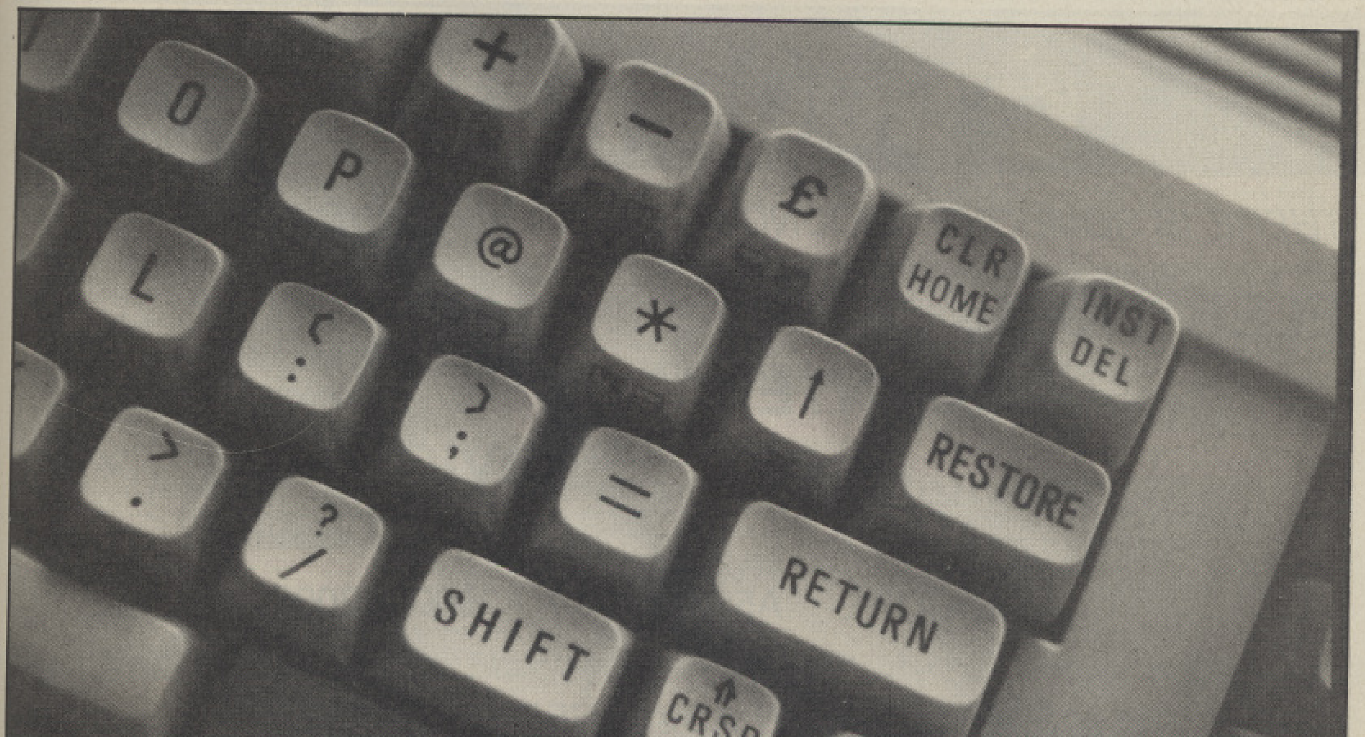
Cartridges are another ever-popular add-on for the 64, and the issue of CCI that I was looking at abounds with adverts for them. No other computer, surely, could have the selection of cartridges that the 64 has got. There's so many! To choose just three at random, you could take a look at the Power cartridge from Bitcon Devices Limited, Action Replay Mark VI from Datel Electronics, or The Expert Backup Cartridge from Technical Developments.

I won't recommend any one in particular, you can visit a shop that has them all and try them for yourself, since most of them seem to have more or less the same sort of features (copies any game but we don't condone piracy, etc.). Like quite a few of the things covered in this article, though, once you've started using one on a regular basis you'll wonder how you ever got along without it, they can be so useful.

Another good avenue to explore, which I know a lot of you do but equally there's an awful lot who don't, concerns Compunet and the host of other similar services that exist in such hordes for the 64. I doubt whether Compunet was the original (I'm sure Jonathan Littlewood, who writes such useful monthly articles for CCI on the topic, could tell me), but it's arguably the best.

My only complaint about Jonathan's articles would be that he never seems to give you any useful addresses to write off to for further details (he will this month, just you wait and see), like where the Independent Compunet Club can be contacted, for instance. Not everyone is going to rush off and buy a modem on the strength of his mentioning the club. If they did, what telephone numbers to ring? I'm sure you could write via CCI though. Do so, and a host of services over the telephone line await you. A bit like an interactive Ceefax is, I guess, one definition of Compunet, but of course the majority of it is of interest to 64 owners specifically, and there are many, many programs for you to download and take a look at. There's plenty more to explore as well, so write to Jonathan and watch your 'phone bill go through the roof. It'll probably be worth it in terms of the amount of information you will glean from Compunet, to say nothing of the contacts that you will make and the sheer enjoyment you'll get out of using this very good service.

Again going from one topic to another very different one, the next advert that leapt to my attention was one about educational software. BBC computer owners seem to think that they've got the strangehold on this sort of thing, but they are wrong. Many companies are producing this type of software for the 64 (the advert I was looking at concerned a load of stuff from Database Software). As ever, search around



continued on page 32

continued from page 31

to find out the best software that's available. And read CCI and look at the adverts, of course!

Some of the other hardware items that can be found for the 64 owner who has everything are joysticks and mice, especially mouse mats and mouse holders. No home should be without a mouse holder. As far as I know nobody's produced one called a mouse trap yet, but don't bother writing and telling me if they have: nothing surprises me in the computer industry anymore. Two adverts in this area that attracted my notice were the joystick one from Euromax (you too can own the Professional 9000 Deluxe, featuring "top fire button and dial a speed rapid fire", whatever that might be), and the mousey one from Datel Electronics again. A GEOS compatible mouse (I suppose they all are, really) comes as part of a whole range of goodies from Datel, including the aforementioned mouse mat and mouse holder. All good stuff.

But, if music be your particular food of love, then read on.

Still with Datel, I see that their MIDI 64 interface plus the Advanced Music System is now available at a combined price of £39.99. Among the thousand and one features are a music editor that works rather like a word processor, and which allows you to print out your masterpiece as well (possibly onto an Epson printer mentioned earlier). Using the interface, any MIDI instrument can be connected up to your 64, and to make their offer even better for a further £60 Datel will part company with the Yamaha SH10 MIDI Synthesiser. From its picture in the advertisement this beast looks rather like a cross between a keyboard and a guitar, and I assume that the SH in the product number stands for SHoulder. Anyone remember the Edgar Winter Group using a bigger brother of this idea on their wonderful song Frankenstein? No? Oh well.

Having established that the 64 can do much more than BEEP at you (unlike some computers I could name) the next thing I jotted down on my trip through the magazine was "Games - Everywhere", which does indeed mean that any 64 owner can flick through CCI and find loads of adverts for games, many of them of a truly outstanding quality. But then, we already knew that.

The last major advertisement that leapt up and grabed me was one from FSSL, which featured two utilities and another cartridge. Cartridge first, the Super Snapshot V4, with all the usual features and then some, will set you back £34.95 if you decide that this is the one for you.

A toolkit for users of the 1581 disk drive is one of the two utilities (including the 1581 DOS reference guide for people ordering NOW), and this is really an almost essential purchase if you own a 1581 and want to get the most out of it. The other utility is something called Maverick V3 (whatever happened to Mavericks One and Two, I wonder), this time working all across the range of the usual Commodore disk drives for the 64. More features than anything else I've seen, and this one costs a mere £24.95. Or, to put it another way, twenty five quid. They've fooling nobody.

On top of all this we still have sound groups of people running the Independent Commodore Products Users Group, which all should join. Jack Cohen's the man to write to, and he's a regular feature in CC!.

There are a host of fanzines that feature the 64, as well as your friendly neighbourhood CCI. Adventure Probe and Spellbreaker, The Cheat Machine and Adventure Coder, are just four that spring to mind, and I'm sure there are many others besides.

There are even people producing books about our favourite computer, from learning Basic to mastering Machine Code, from specialist graphics to specialist sounds, from anything to everything.

In short, I don't really think the 64 is ready for a coffin just yet. It might need a pacemaker in about five years time, but I'm sure someone will have produced one by then. Will we still love it when it really is 64? Probably!

P.G.

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P.G.

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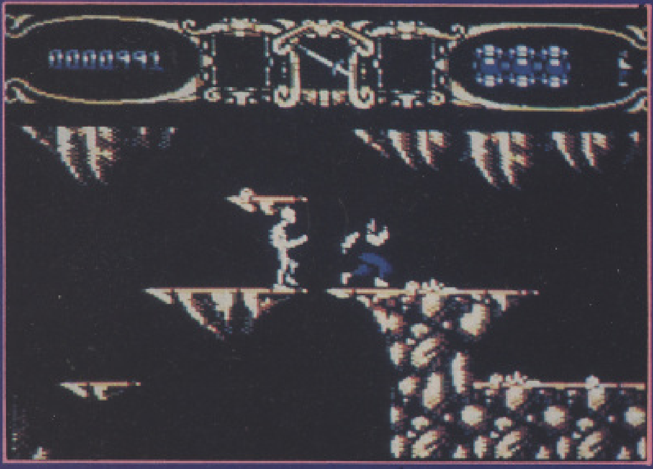
MYTH

System 3

System 3 haven't published too many games over the years, but the product that they have released has almost always been successful. Games such as the International Karate series, The Last Ninja and its sequel are regarded as milestones in Commodore programming. So it's particularly good news for 64 owners that their computer is still System 3's first machine for games.

Like Tusker which precedes it, Myth is something of a departure from the earlier beat 'em up style product. In essence it's a true arcade adventure, in that you have plenty of running around solving puzzles (some of which are extremely hard) and enough enemy-bashing to please the most ardent fight game fan.

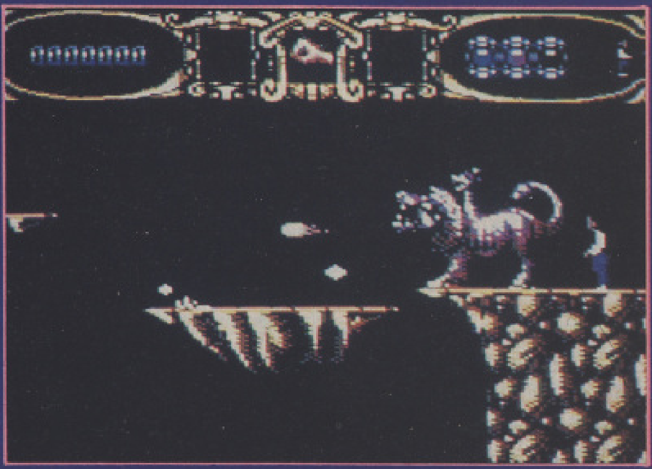
It concerns an evil god called Dameron, who's gone back through time and corrupted all the myths, turning amiable deities into creatures of hate and vengeance. If you allow him to continue with his dastardly schemes, the present and future of the earth could be ruined, as time is distorted and evil causes lead to terrible effects.



There are four mythical worlds in all, each of which takes a separate load. This isn't as bad as you might first think, since each world contains three levels, giving you a total of a dozen pretty mean stages to combat before you complete the game. There are plenty of different tunes and spectacular sound effects, including some impressive sword 'chinks', a Gorgon's head full of hissing snakes and a thunderous storm effect on level two. There's also some excellent sampled speech welcoming you to the start of the game.

First off you're thrust into the Greek Hades, filled with fiery pits and eldritch creatures. Harpies assault you from all sides, skeletons rise from their graves and deal vicious sword-swipes at you, demons emerge from the flames and attack without mercy.

The next couple of stages take you above ground into a land of gladiators and Gods. You meet a nymph who beckons you, but if you approach too quickly you won't receive her special gift. You can also attack a statue of Achilles by swiping at his vulnerable part to gain a special form of protection - if you know your mythology, you'll know what to do straight away; if you don't, it's all the more fun trying to unravel the mystery.

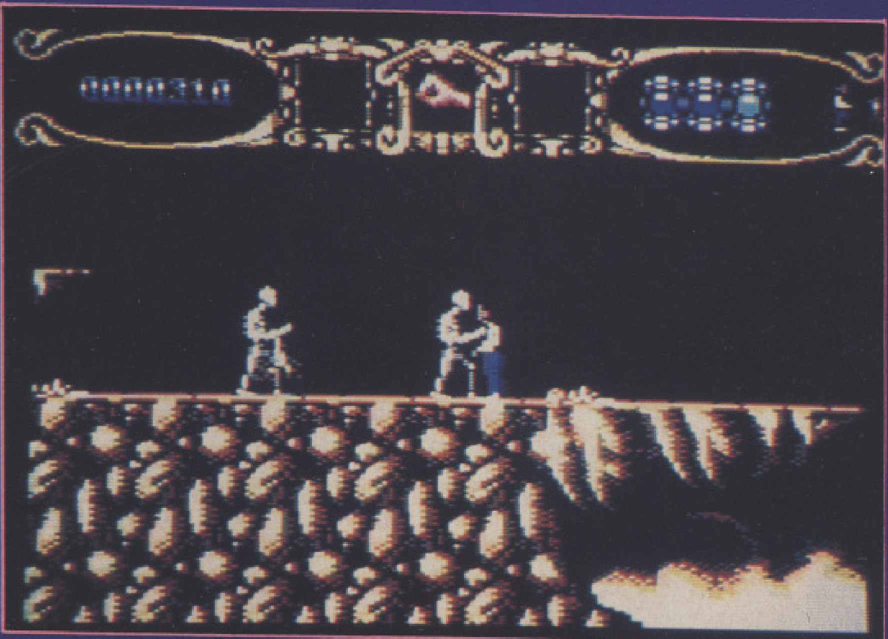


There are also three horrible major monsters around on this world: Medusa, a Chimaera (a fierce beast with a lion's head, goat's body and a serpent's tale) and a Hydra (a three-headed dragon-like creature). You have to keep your wits about you and solve a couple of puzzles before you can kill them all.

World Two pits you against the Norse Gods. You begin on a Viking ship, with thunder and lightning flashing overhead. Fail to perform the correct actions quickly enough and you get shrivelled by a thunderbolt. The special effects on this section are superb, as you see your character silhouetted against a dramatic skyscape.

Escape this and you're transported to faeryland, populated by huge trolls and wood elves who'll refashion your sword into something a little more uncomfortable for your opponents. Finally you're at the Palace of the Gods, a multidirectionally scrolling landscape full of cute firedrakes that roast you coupled with some seriously angry vegetation. Defeat Odin in his own courtyard and you can progress to the second half of the game.

The last two worlds are very different. You enter Ancient Egypt wondering what to do as you stand at the base of a pyramid. Start jumping up and you discover there are several cleverly disguised platforms. Jump around long enough and you're bound to find the secret passages that will get you through the level. This is arguably the best section of the lot - full of vicious traps, great puzzles and some genuine shocks!



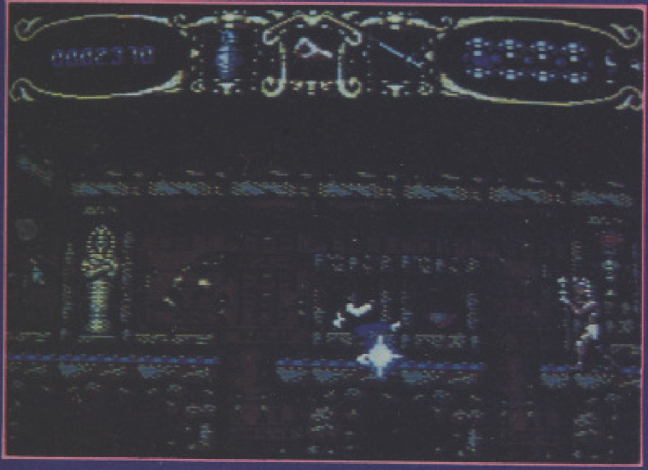
When you reach the final level, you're in a fantasy world where time and space are distorted. Meditating in a kind of horizontally scrolling shoot 'em up (with one of the best starfields you'll see), you've got to reach the final confrontation with Dameron. And when you do, you're in for a huge surprise...

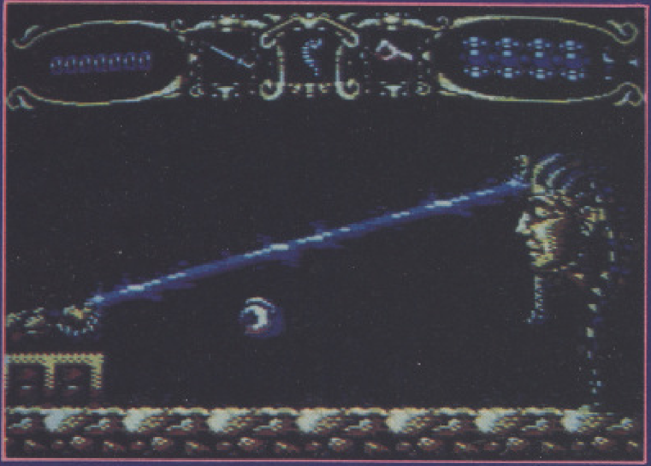
Bob Stevenson's animation on all the sprites is superb. The main character - he hasn't got a name, but is a kind of 'boy-next-door' figure - has to be seen to be believed: extremely fast and fluid movement take him through running, jumping, walking, using weapons, kicking, punching and crouching.

The major attraction of this game, though, is the devious puzzle element. It takes you a long while to figure out just what's going on, but when you do you kick yourself because it seemed so straightforward. The game's all the more compelling for being so clever. Add to this puzzle element four worlds which are all very different in form and content - and some of the best graphics and sound seen and heard on your 64 - and you've got one of the best games to appear this year. Highly recommended.

K.H.

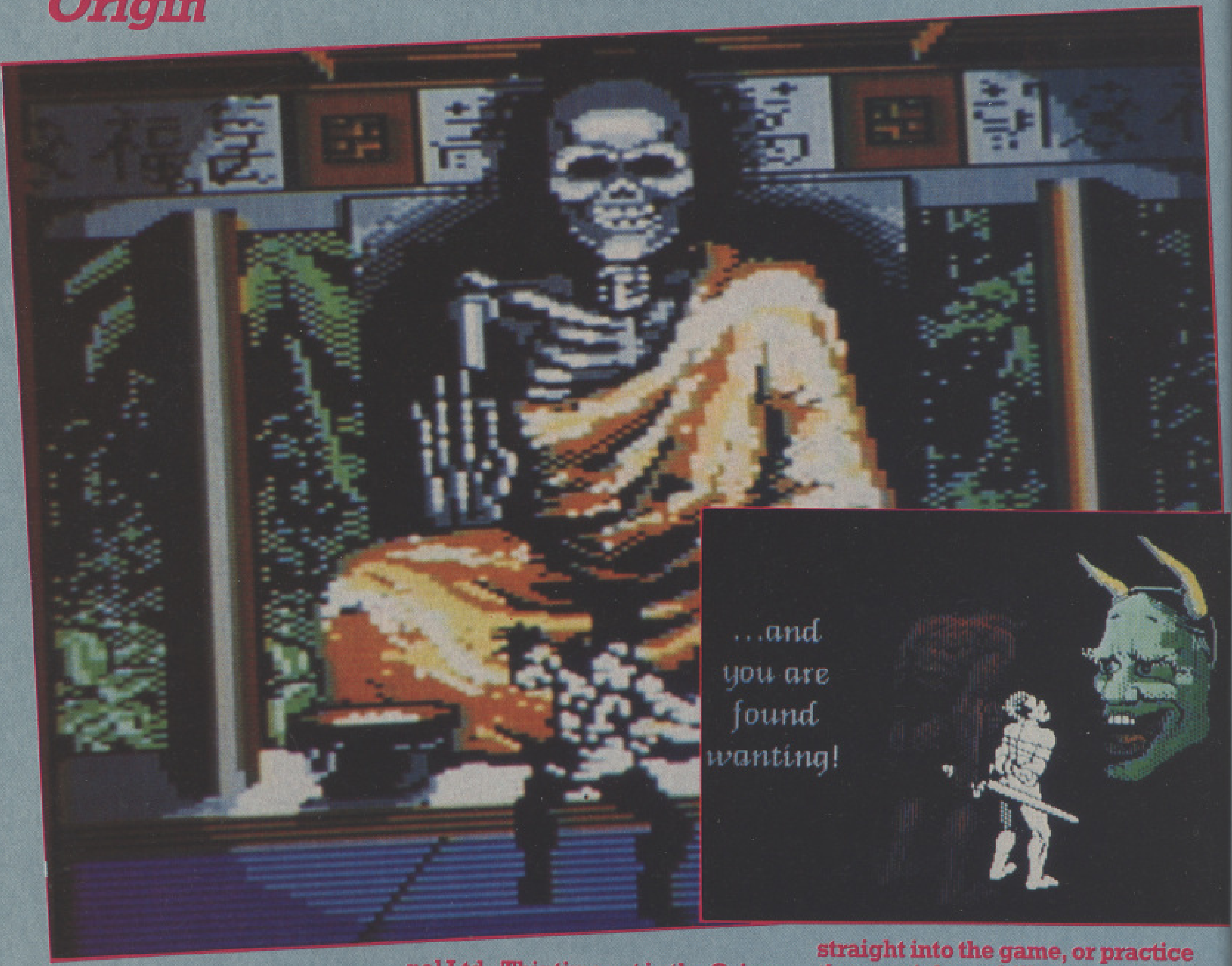
Graphics: 92%
Sound: 86%
Playability: 95%
Overall: 94%
Price: £9.99 cassette, £14.99 disk





Windw

Origin



"**Y**ielding. The universe is united in power. So too the wise person executes his actions with power and creativity. Exceptional progress comes by correct persistance." - I Ching - The Book of Changes.

Ahead in the distant mists of your mind's eye... a light... a presence... a voice... "I am Moebius, the Windwalker."

"Windwalker" is the title of the latest offering from Origin Systems Inc., the people who brought us the famous "Ultima" series of adventures and is distributed in the UK by Mindscape International Ltd.. This time set in the Oriental land of Khantun where, once again, evil is abroad and it is your task to "enter the realm, dispel the darkness and, if you can, achieve enlightenment". Your guide and mentor is Moebius, the Windwalker, who "walks the boundaries of Time, Space and Thought as an observer of the ways of humanity."

The game is supplied on two disks (four sides) and after the loading sequence, which takes a fair time but is well worth watching, places you in the presence of Moebius for your first instructions. You may choose to go straight into the game, or practice the martial art skills that you will need in your travels. I strongly recommend that you select the latter of these options before your venture forth, you'll need them.

Upon choosing to practice, you will have to face a succession of enemies, ranging from swordsman to Ninja. Your weapons - your bare hands or a Monk's staff. At the end of each practice session you will be given the opportunity to review the action to see where you succeeded, or failed. Practice as much as you can, the enemies you will meet for real are not as forgiving or as friendly as your sparring partners. When you have

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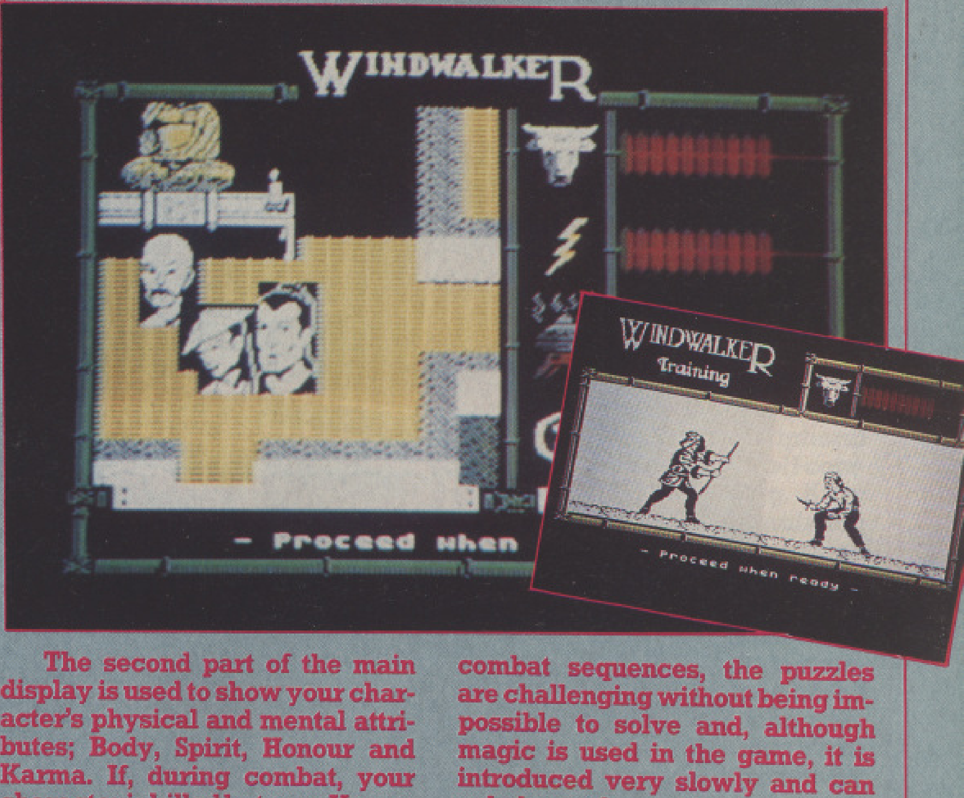
finished, the game proper begins.

From here on, all the action takes place as you move about the lands of Khantun, talking to its inhabitants, visiting shops, shrines and a host of other buildings. Items can be bought and sold, information exchanged and wisdom gained as you seek the way to defeat the Emperor Warlord, Zhurong and the crazed alchemist Shen Jang, who struts by his side and brings forth evil spirits to take possession of Khantun's holy shrines.

The display is presented as two main areas. The Travel Window contains the Player Character Icon, moving over a very reasonable perspective background, which indicates the character's current position. The background contains all the buildings and objects that can be found, visited and entered. On entering a building the display changes to a close up of the interior, where further objects and people may be found. As you move around, other characters frequently move in and out of the screen. These can be talked to and sometimes bargained with but, occasionally, they might not be all they seem and will attack you for your money and possessions. That is when all your practice will be needed!

> *"If, during combat, your character is killed but your Karma is strong, you will be resurected to continue your quest."*

When (not if!) you are attacked, a "Combat Window" will open, similar to the "Practice Window", where you and your opponent will be shown in (almost) digitised quality graphics. An Abacus-type indicator in the top-left of the screen reflects your physical well-being. If your opponent scores too many hits, this will be reduced to zero and you might die. In both types of combat all movements are entered via the keyboard, using just thirteen keys and include a good variety of punches, kicks and other moves.



The second part of the main display is used to show your character's physical and mental attributes; Body, Spirit, Honour and Karma. If, during combat, your character is killed but your Karma is strong, you will be resurected to continue your quest.
As you progress, your character will rise from being a lowly fisherman to the heights of wisdom, as a leader of men and master of the martial arts, until you are able to overthrow Zhurong and defeat Shen Jang.

Windwalker is a very impressive game that has obviously had many, many hours of careful research put into it by the author, Greg Malone, who has had a long-term fascination with the Orient. The list of credits at the back of the, very comprehensive and professionally produced, manual would do credit to many a full-length feature film, complete with Producers, Artists and even a Chinese Consultant!

All of the time and effort has resulted in a superbly produced Fantasy/Roleplaying/Martial-Art type adventure game. The graphics are first-class, as are the combat sequences, the puzzles are challenging without being impossible to solve and, although magic is used in the game, it is introduced very slowly and can only be performed by an "enlightened" character.

> *"The graphics are first class, as are the combat sequences."*

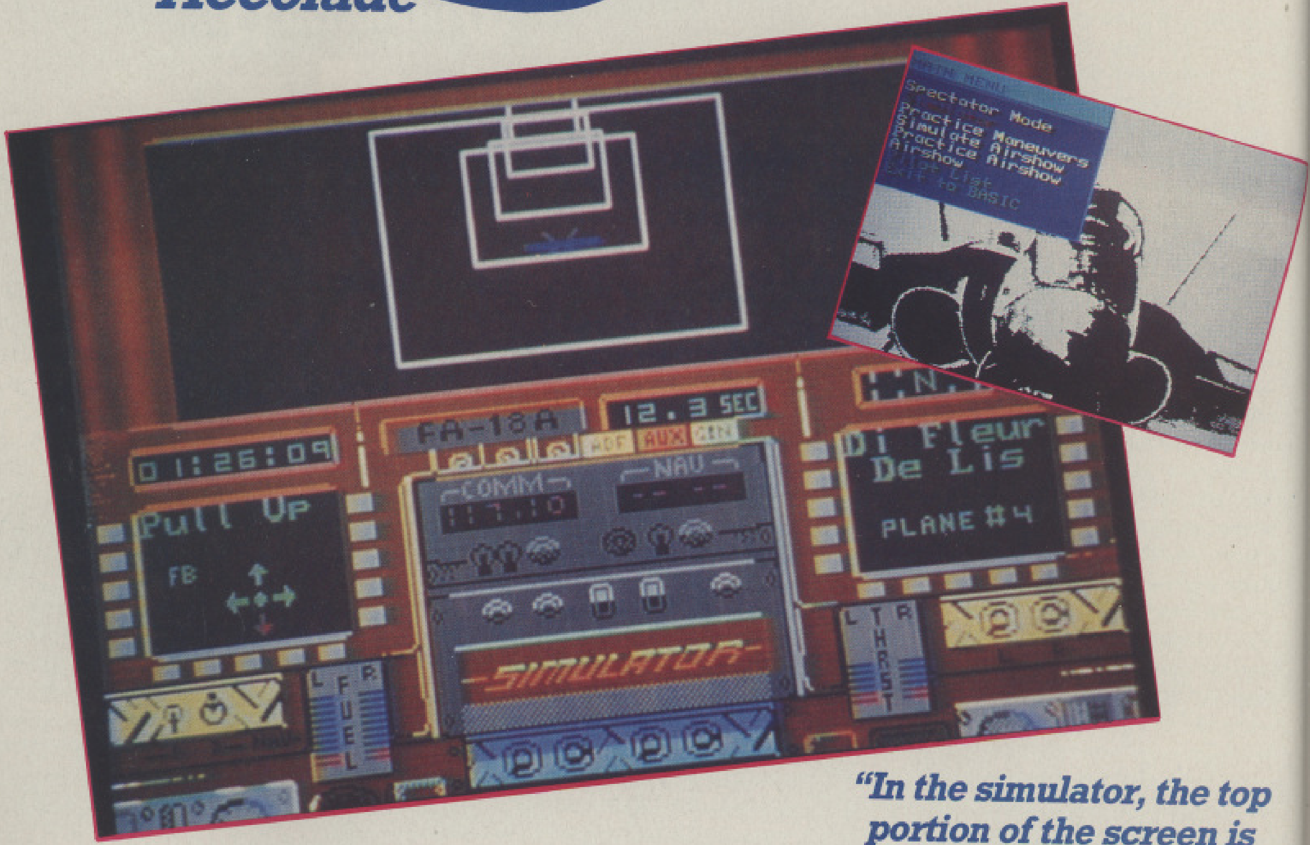
Overall, I think Windwalker is an excellent program that should appeal to a very wide cross-section of computer adventurers and role-players, giving many, many hours of entertainment. Congratulations to Greg Malone and Origin.

N.S.

Graphics 86%
Sound 63%
Playability 83%
Overall 82%
Price : £19.99

Blue Angels

Accolade


MAIN MENU
Spectator Mode
Practice Maneuvers
Simulate Airshow
Practice Airshow
Airshow
Pilot List
Exit to BASIC
12.3 SEC
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Pull Up
FB
COMM
NAV
Di Fleur De Lis
PLANE #4
FUEL
THRST
SIMULATOR

Proving there's more to flight simulations than shooting down Migs over the Middle East, is Accolade's Blue Angels. The Blue Angels are the American equivalent of the RAF's Red Arrows, who revel in doing dangerous things in fighter planes above amazed onlookers (and sometimes right on top of them!) Accolade's game puts you in the cockpit of a Blue Angel F/A-18 Hornet, training you up, before dropping you into a real airshow.

As is the way with most flight sims, Blue Angels comes with a sizable manual of 34 pages, covering the game's many options. It suggests that beginners select the spectator mode, to get an idea of what's expected of them. This gives you a view of the airshow from inside one of the planes, but there's no option for an external view. When you've had enough of that, you can move onto the next stage.

To prepare you for the real thing, the game has a simulation of a flight simulator (What? A Sim of a Sim? Ed). Here you can choose to fly in one of three positions in the formation, and try out any of a wide range of manoeuvers. In the simulator, the top portion of the screen is devoted to a representation of your plane, which flies through a series of rectangles. These rectangles guide you through the selected manouever, backed up by a window to the left indicating the correct joystick movements. Further help is given by the clock which counts down to the start of the next move. On

> *"In the simulator, the top portion of the screen is devoted to a representation of your plane, which flies through a a series of rectangles."*

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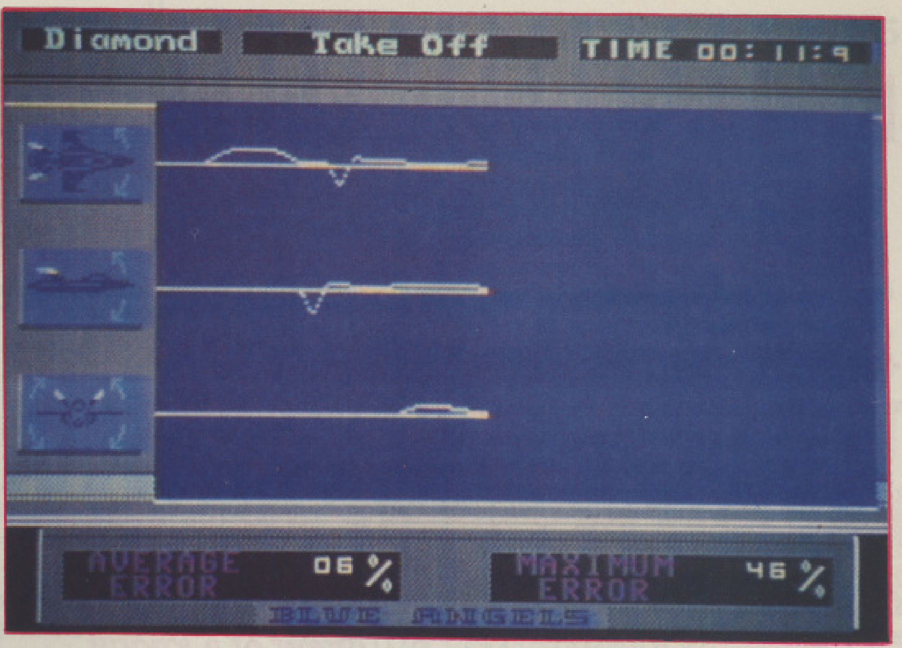
leaving the simulator, the evaluation screen charts your performance on a graph, highlighting any inaccuracies in pitch, yaw and roll.

The idea is that you work your way up through training sessions until you're ready to take part in a real airshow, but fortunately for everyone who likes to jump in at the deep end, you can do just that the first time you play. When flying for real, the display is the same as in spectator mode. The top third of the screen is taken up by your view of the outside world, with various flashing lights and VDU's filling the rest. Although this is supposed to be the real thing, it plays just like the simulator. There's no point in looking out of the cockpit, as the only way to keep on course is to use the plane's built in computer, flying the sprite through those approaching rectangles.

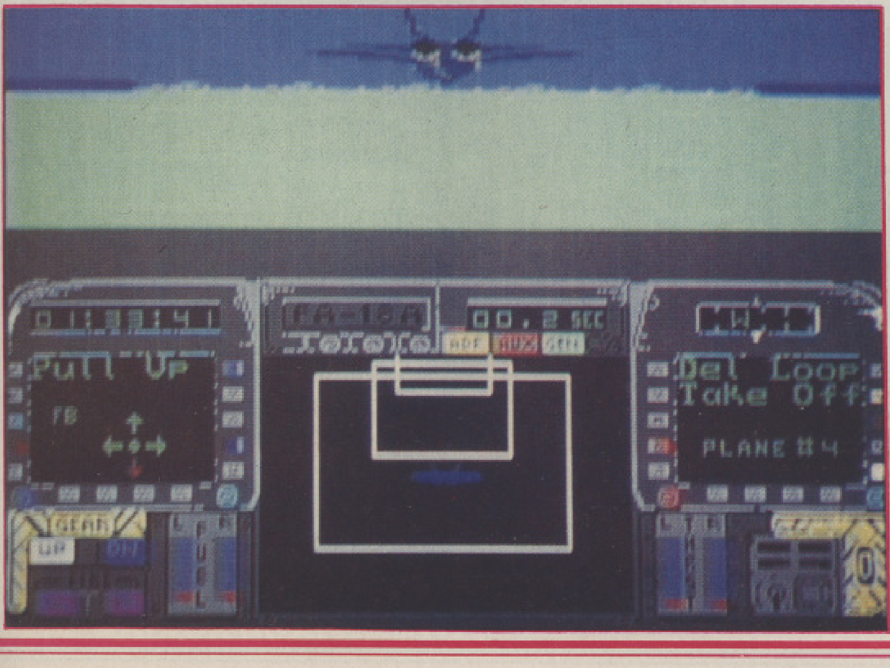


Unlike most advanced flight sims, Blue Angels uses sprites and scrolling backgrounds rather than vector graphics. As you'd expect, this severely limits the view from the cockpit. Any attempts at breaking away from the formation and repositioning for a better look, are halted by a red screen and what sounds like a sampled sneeze. (Probadly that really is what happens with the Blue Angels) Without vector graphics, zoomable views from the cockpit or spotter planes are out of the question. So, the most you ever see is a plane in front of you, and if you're lucky, a couple of wingtips from the planes on either side. (That's probably realistic to...) Because of this, it doesn't quite to generate the convincing airspace of the kind seen in Chuck Yeager's Advanced Flight Trainer, or even that of Mercenary. However, it is lively to use and may well be just what happens in these frightening wingtip to wingtip manoeuvres.

> *"The idea is that you work your way up through training sessions until you're ready to take part in a real airshow but fortunately for everyone who likes to jump in at the deep end, you can do just that the first time you play."*

There are so many menus, options screens and other peripheral features, that the game itself comes as a little disappointing. After all the training and simulation screens, and working through an unnecessarily large manual, I was amazed to find that to fly an airshow, all you have to do is steer the plane through the oncoming rectangles. Great Blue Angels here I come! The idea of a formation flight sim is a great one, there's no denying Blue Angels is extremely neatly presented. I don't think they have done all they could with the idea but it is simple enough for the beginner in the flight simulation to be able to manage it and get some good experience. Fortunately what Blue Angels doesn't demand is the kind of telepathy that these stunt pilots really seem to possess. I bet you can fly and stay alive in the Blue Angel computer game. The real thing is just too terrifying to think of. It maybe exciting but it must be like playing catch with a hand grenade.

B.V.

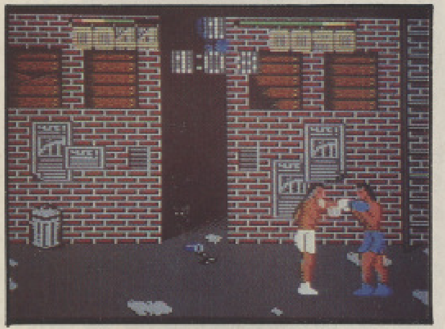


Graphics: 74%
Sound: 51%
Playability: 54%
Overall: 60%
Price: £14.95
(disk)

The Champ

Linel

Unlike martial arts or street fighting, boxing is rarely the subject of a decent computer game. The most successful boxing simulations seem to be those viewed from above and behind the player's character, possibly because of their increased realism. The Champ on the other hand, takes the flagging format of a side-on view, and makes an attempt to spruce it up with a few different backdrops.



The Champ is all about an up and coming boxer, yet to break into the professional circuit. The game puts you in the sweaty shoes of this would-be Tyson, who starts out his fight to the top in the backstreets of the city. Your first fight is supposed to be a rather shady affair, in which you're told the Queensbury rules are not applicable. However, as you can only throw clean punches, there's no possibility of foul play, and the setting of a dark alley has no bearing on the gameplay.

> *"As you can only throw clean punches, there's no possibility of foul play."*

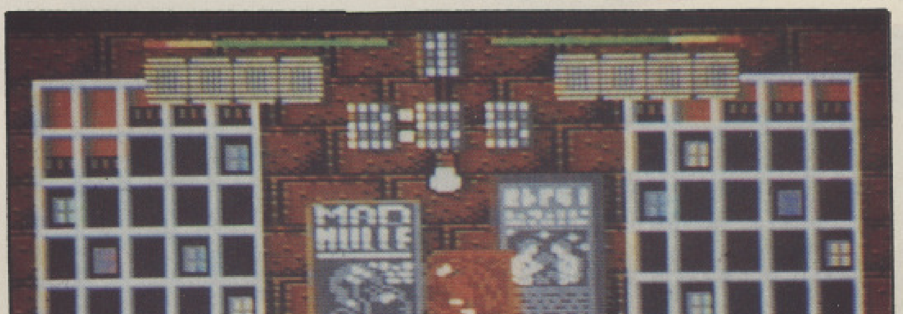
As with most boxing sims, the available range of blows is extremely limited in comparision to any other combat game. Although there are eighteen moves in all, these are just punches to various parts of the body. There's only so much variety you can inject into a handful of head and body punches, and even with the "super punch", the game follows the lead of just about every other boxing sim, degenerating into a slow moving exchange of punches, with neither fighter managing to gain any substantial ground. Other than in the event of a knock down, the fighters barely react to each other's blows. This does nothing to make up for the existing lack of tension. How are you supposed to get worked up by a couple of boxers who seem to have all the aggression and enthusiasm of a bereaved tortoise?

> *"Other than in the event of a knock down, the fighters barely react to each other's blows."*

It's not as if there are no boxing sims around already. The Champ neither has the cartoon graphics and varied opponents of Fight Night, the depth of Barry McGuigan's Boxing, or the sly moves of By Fair Means or Foul. Neither does it have any noteworthy new features of its own. For two or three pounds, this would be excusable, but at this price it's just not enough. If you fancy a boxing game, you'd be far better off picking up a copy Fight Night in its budget form.

T.H.

Graphics: 77%
Sound: 20%
Playability: 52%
Overall: 51%
Price: £9.99 (cass) £14.99 (disk)



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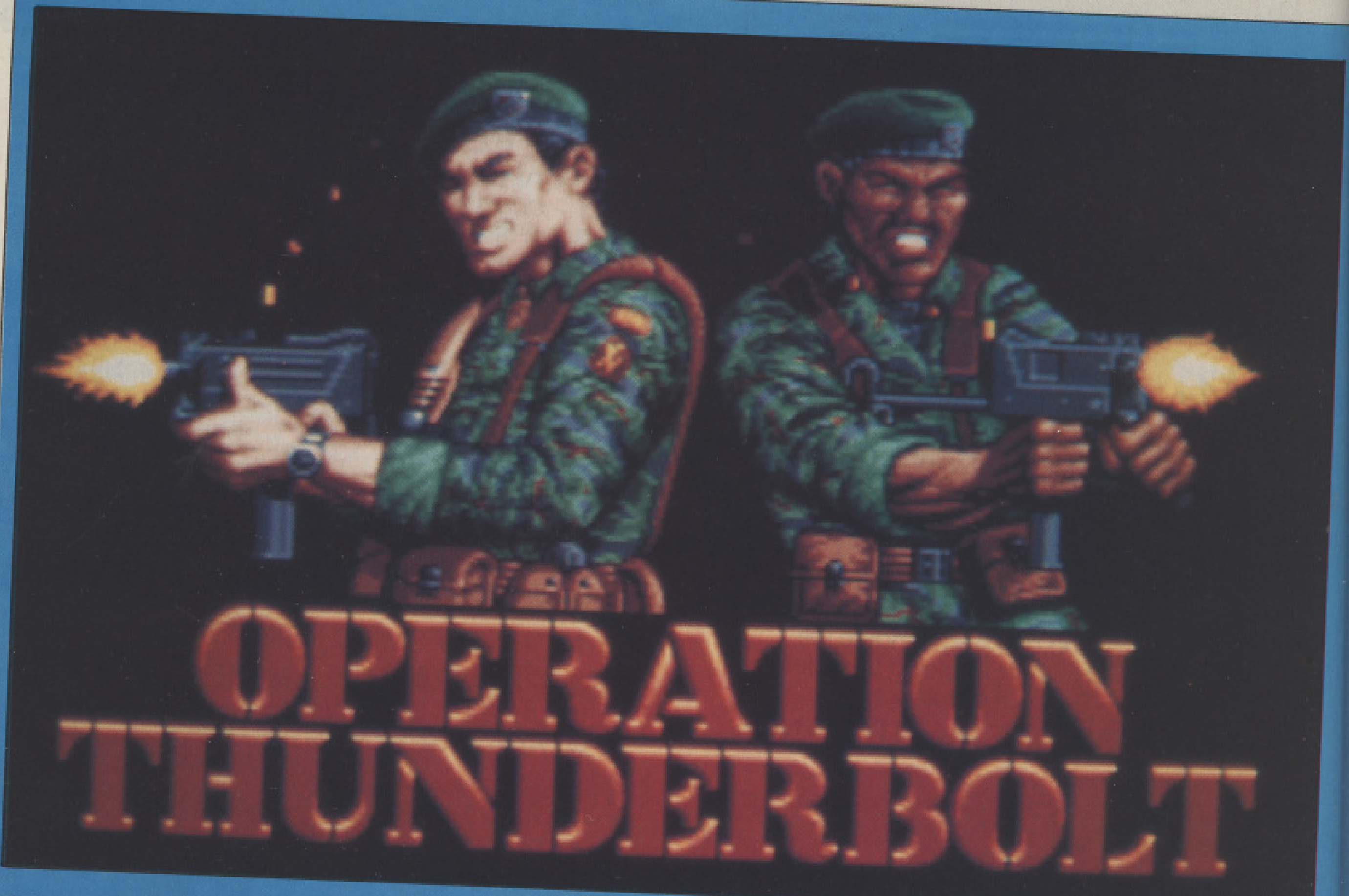


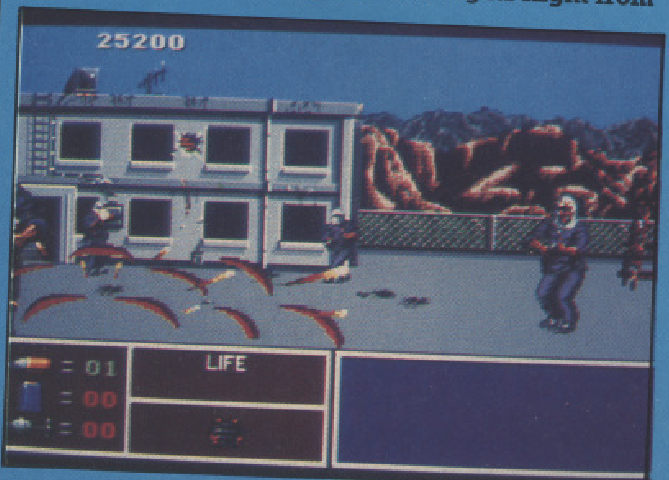
Ocean

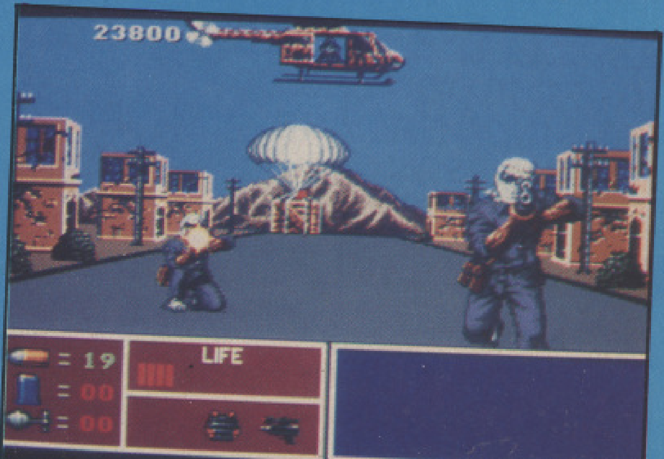
Superman has nothing on Roy Adams, the star of Operation Wolf. After surviving horendous attacks from soldiers, tanks, helicopters and gunboats in his first mission, he's back for more in the sequel: Operation Thunderbolt. This time, the enemy is said to be more powerful than the last, so Roy has roped in his mate Hardy Jones.

> *"You have to yomp through eight levels of blood bullets, before taking out the last of the terrorists and freeing the captives."*

A DC10 has been hijacked during its flight from Paris to Boston, and is now headed for the Middle East. The terrorist are demanding the release of their imprisoned comrades, threatening to kill the captain of the plane if the authorities refuse to co-operate. Unfortunately, the situation is worse than was immediately obvious, as it turns out that a whole army stands between the airliner and any rescue attempt. Dropped on the fringes of the hostile territory, you have to yomp through eight levels of blood and bullets, before taking out the last of the terrorists and freeing the captives.

Unlike its predecessor, Thunderbolt's opening scene has the players running down a street, viewed in first person 3D perspective. Soldiers charge up from the horizon to meet you with a hail of gunfire, each of whom can be eliminated with a single shot.





Choppers put in an occasional appearance, taking a good few direct hits or a grenade before exploding. Extra magazines and grenades are dropped in by parachute, as are bullet-proof jackets, energy top-ups and sights for the sub-machine guns. These can also be picked up by shooting the dogs and cats that run across the screen. Don't worry though, they'll just squeal and run off the screen unhurt. The 3D effect of the arcade machine was pretty naff, and in the Amiga version, the roadside buildings are some way off moving smoothly, although the graphics are a little neater.

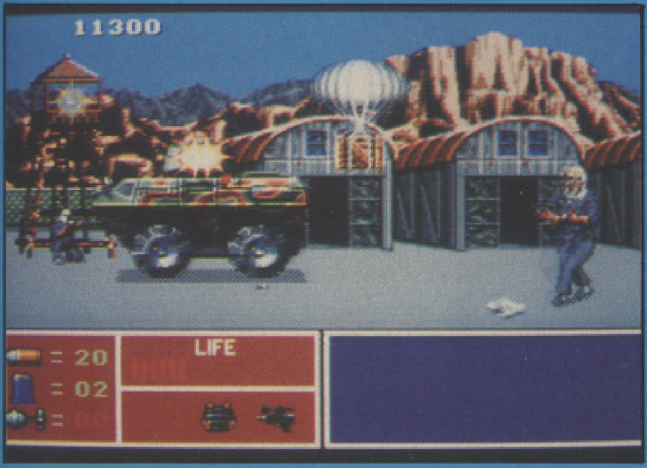
> ***"Concentrate too long on any particular enemy, and you're likely to be overwhelmed by the cocktail of explosives hurled at you."***

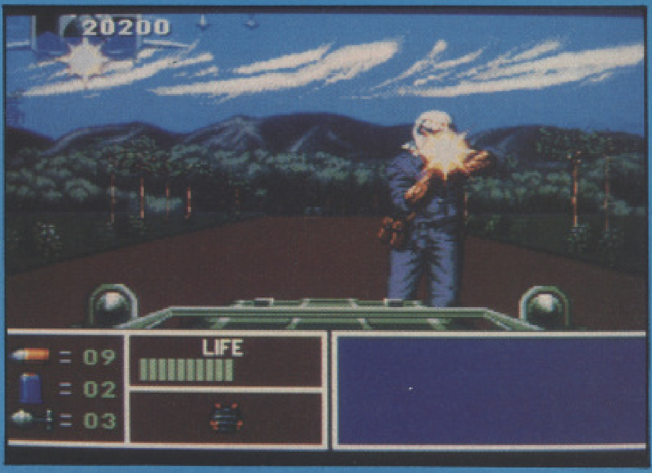
Level two is a great improvement. Scrolling from left to right as in Op Wolf, the game gets a lot harder from here on. The enemy are now heavily armed with knives, grenades and rocket launchers. Some roll on in armoured cars, and others snipe from the top of well-defended watchtowers. Taking out the men with rocket launchers is one of your prime concerns, but concentrate too long on any particular enemy, and you're likely to be overwhelmed by the cocktail of explosives hurled at you.

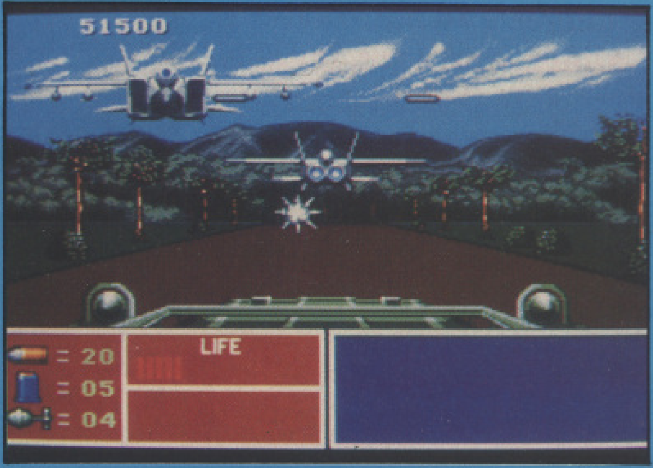
Back on the road for level three, your troubles escalate. Speeding down a bumpy road in an old jeep, you struggle against tanks, fighter planes and the odd soldier. The 3D works a lot better here than in the first stage, with smoother, faster animation. Each following level alternates between horizontally scrolling and 3D views.

The guns from the coin-op have been replaced by mouse controls, which are noticably more responsive than they were in Op Wolf. The two-player mode can be played with either two joysticks, or two mice. Two mice work fine together, but the game loses out with two joysticks. Fast, accurate shooting is a lot more difficult with a joystick, which is a shame, as a lot of players won't have easy access to an extra mouse.

Thunderbolt's graphics are very impressive, at least as good as those of the coin-op. Along with all the giant enemy sprites and explosions during the game, there's also a superb static screen between each level. The strange intonation of Op Wolf's speech ("Sorry, but you are finished...HERE"), has been exagerated in the sequel, with some excellent dramatic, but jokey lines uttered between levels. You also get a wider range of sound effects, with a "ping" as you shoot a knife out of the air, yelps from the dogs, and constant machine gun fire knocking the dust off the speakers. The classy front end includes a well drawn storyboard outlining the scenario, with a sombre soundtrack from Jonathan Dunn.







As you'd expect, Ocean have done a superb job of the conversion. The excessive disk swapping of Op Wolf has been done away with, and it looks just as good as the coin-op. Thunderbolt was never one of my favourites in the arcades, and so the Amiga version hasn't quite bowled me over. However, the name is obviously going to attract fans of the coin-op, and it won't disappoint. With presentation so slick you could grease your hair with it, and gameplay and graphics to match its arcade counterpart, Operation Thunderbolt is yet another spot on conversion from Ocean.

T.H.

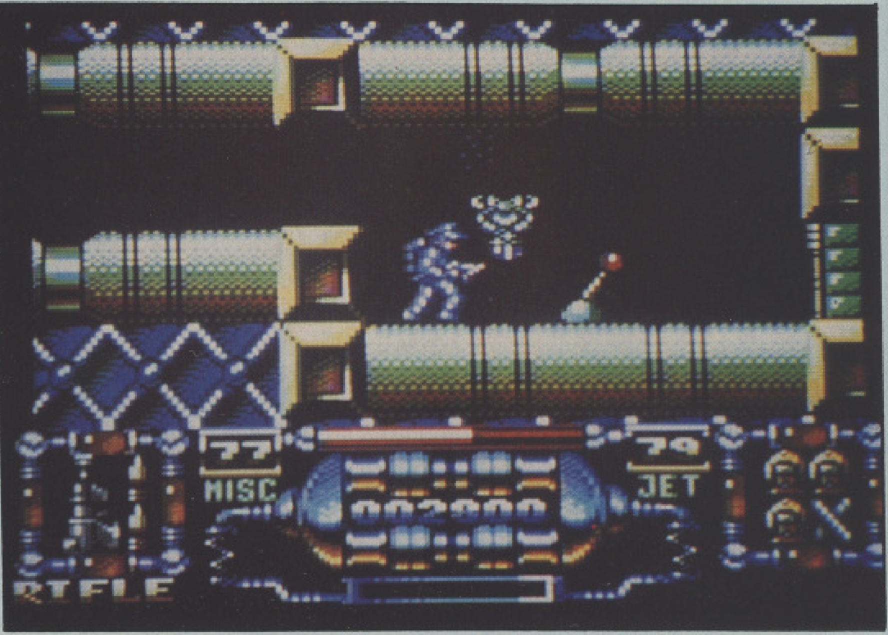
Graphics: 91%   Sound: 80%   Playability: 80%
ABSOLUTE VALUE: 71%   Price: £24.95

Dan D

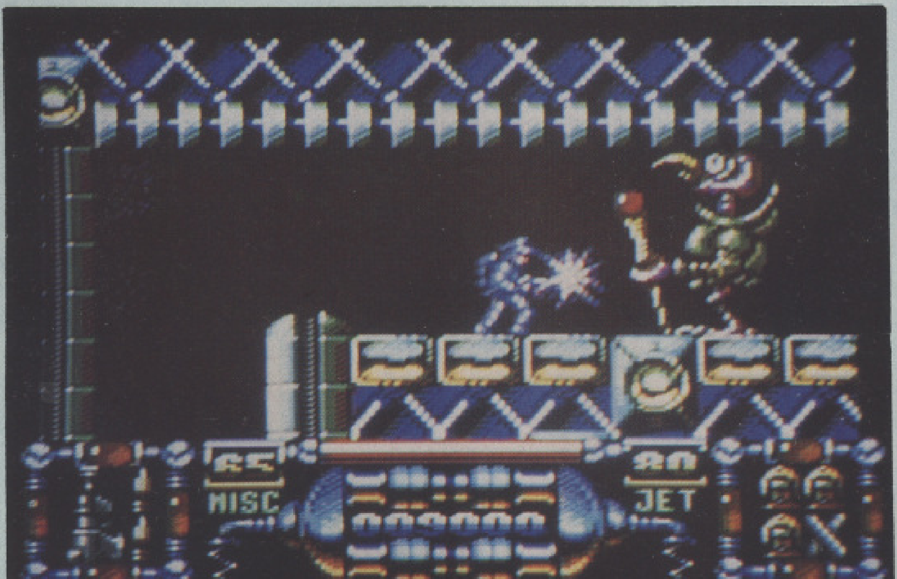
Virgin

After the dynamically designed and presented original Dan Dare computer game, the sequel's Dan Dare shallow gameplay and basic graphics came as a bit of a disappointment. Although not as innovative as the first in the series, the newly released Dan Dare III is an improvement over the second. (Will there be a DD V. VI or X yet?)

> "The cans of fuel are guarded by Mekon clones and other wierd aliens, and each level is infested with an assortment of lesser aggressors."



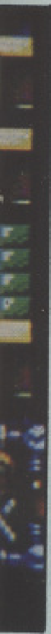
Programming is credited to Nick Jones, graphics to Hugh Binns, and the sound to the Maniacs of Noise. If that sounds a familiar line-up, you probably recognise the names from recent Hewson releases. The team have been responsible for converting most of Raffael Cecco's games to the 64, including Cybernoid and Stormlord. What they've done here is to amalgamate the designs of Raff's games, and put them into a Dan Dare scenario. The result is far from original, but it looks and sounds pretty good, and plays justs as well.



> "One of the better tunes from the Maniacs of Noise fronts the games, and the effects are up to scratch."

You play Dan, of course, who's equipped with the basic set-up of a laser gun and a jet pack. Both fuel and ammo supplies are limited, although your jet pack can be topped up free of charge at the fuel pump. Your battle is fought around five multi-directionally scrolling levels. To escape the levels' confines, you need to round up fifty

Dare III



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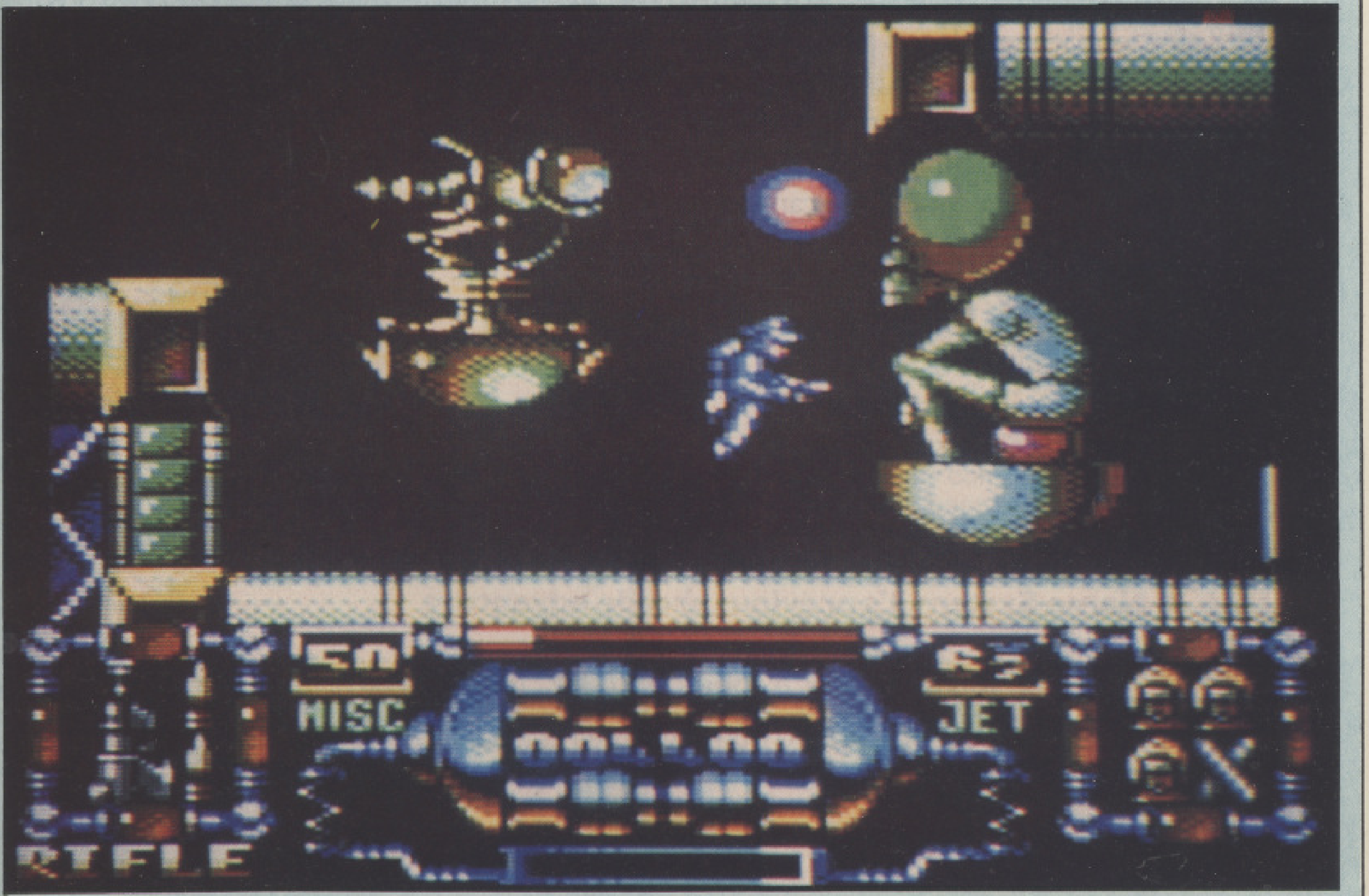
pounds of fuel for your ship. The cans of fuel are guarded by Mekon clones and other wierd aliens, and each level is infested with an assortment of lesser aggressors. The levels are all connected by a series of teleports, but before you can use these, the current level's guardian has to be destroyed. Your flight through the teleport is not automatic, and requires you to steer the ship through a number of time gates. Veer outside the gates and your energy suffers, although it's unlikely you'll ever have much trouble here.

As you'd expect from the artist behind Stormlord, the graphics are excellent. Although not as colourful or original as Stormlord, there's a generous amount of large, detailed background features and characters. One of the better tunes from the Maniacs of Noise fronts the game, and the effects are up to scratch.

When it comes to gameplay, Dan Dare III is very similar to Cybernoid, without the excessive difficulty level. The ability to buy extra weapons, and the teleport sequence, both add variety to the game. Unfortunately, the price you pay for all the graphics and other details, is a reduction in the size and number of the levels. Everything loads in one go, which does help keep the game together, but obviously limits its size. That's the game's only downfall, as it's all very playable, but I can't see it keeping most gamers' interests for long.

T.H.

Graphics: 93%
Sound: 81%
Playability: 60%
Overall: 62%
Price: £9.99 (cass)
£14.99 (disk)



◆ WIN ◆

SYSTEM 3'S LEGENDARY MYTH!

WELL STONE ME, MEDUSA! AN ABSOLUTELY MYTHICAL GAME!

As you can tell from the review of Myth in this issue, System 3 have come up with another corker. Spread across four loads, each with three levels of mean Medusas, scarey skeletons and countless other hideous monsters, Myth is not for the faint-hearted. To celebrate its launch, System 3 have given us twenty copies of the game. Being the generous bunch we are, we thought we'd put them up as competition prizes. To prove your worth, you'll have to correctly answer the following questions. If your postcard is then plucked from the depths of the CCI comp sack, you can look forward to a copy of the game plopping through you letter box in the very near future.

1. What was special about Medusa's hairdo?

a) She was bald
b) It was made of seaweed
c) It was a mass of snakes

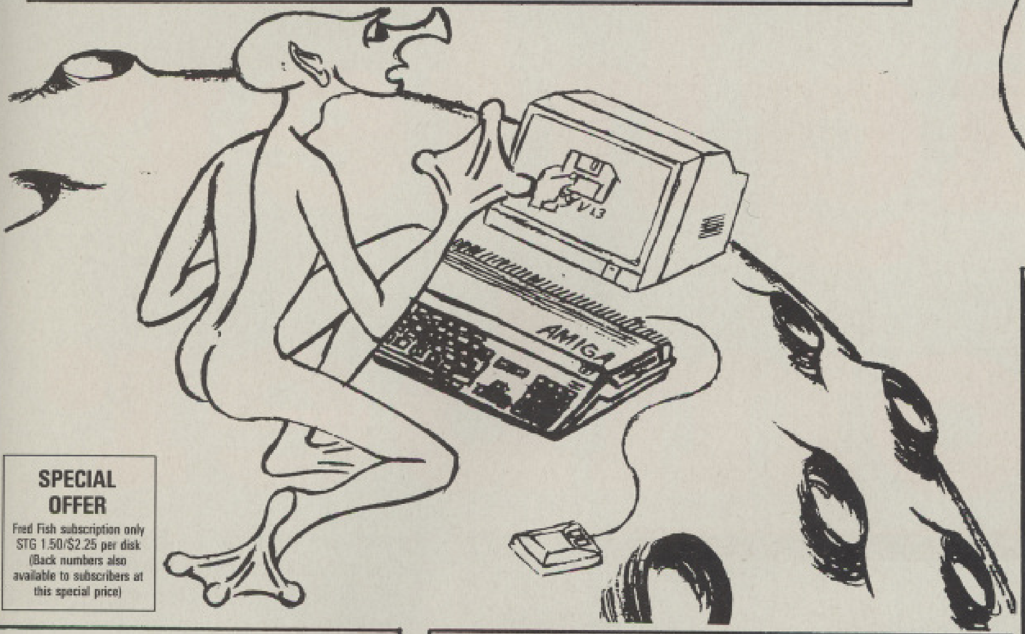
2. Who designed the graphics for Myth?

3. Name System 3's previous arcade adventure

Answers on a postcard by May 15th

Myth Competition, CCI, 40 Bowling Green Lane, LONDON EC1R ONE

SORRY! THE WORLD IS OUR LIMIT!



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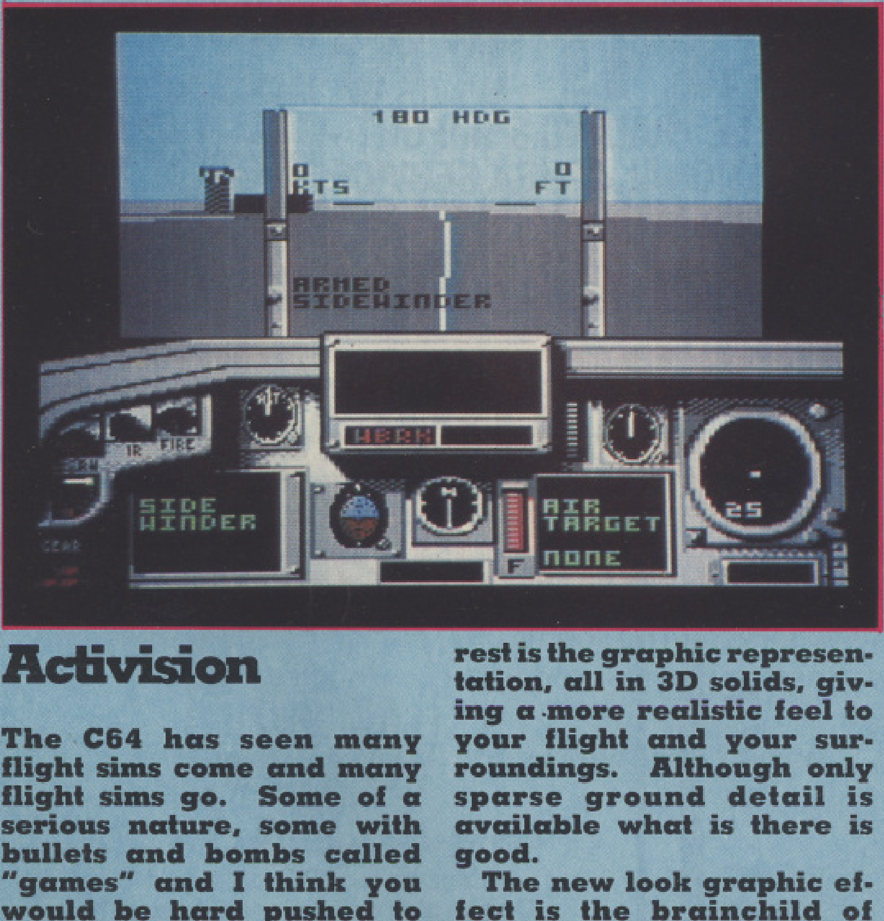
Fighter Bomber



Activision

The C64 has seen many flight sims come and many flight sims go. Some of a serious nature, some with bullets and bombs called "games" and I think you would be hard pushed to find a better "game" than Fighter Bomber, the latest flight simulator from Activision.

This is a game in the style of Gunship where you are sent out on a series of mission, you must succeed in order to qualify for the advanced and more difficult missions. Here most of the likeness ends and the thing that puts Fighter Bomber 30,000ft above the rest is the graphic representation, all in 3D solids, giving a more realistic feel to your flight and your surroundings. Although only sparse ground detail is available what is there is good.

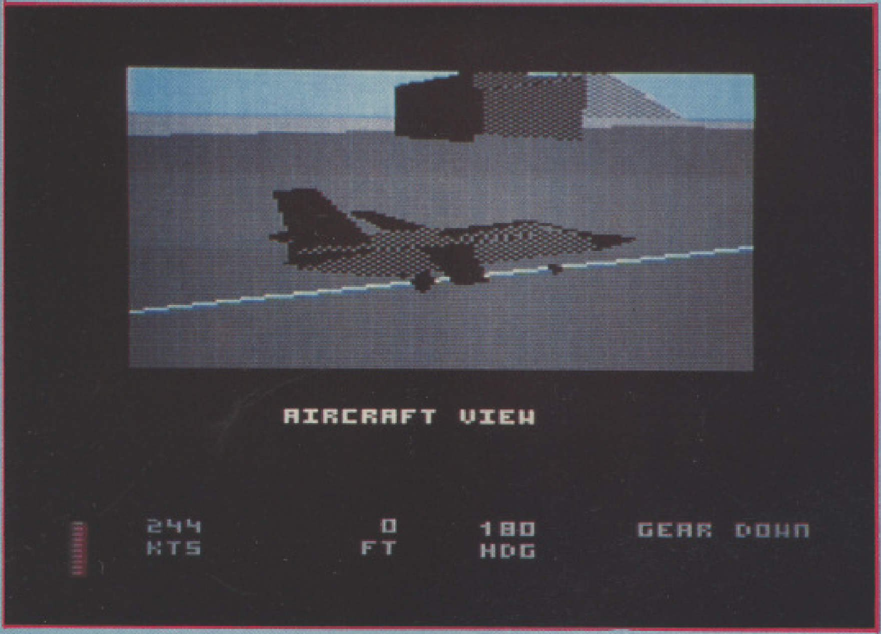
The new look graphic effect is the brainchild of Vektor Grafix, they have spent a lot of time developing the new graphic system, in my opinion it has been time well spent. My first criticism, however, is that the flight characteristics of the planes make flying really simple and too easy to be realistic. I suppose this could be a bonus for the less proficient pilot though.

It's time to put on your white silk scarf, goggles and leather helmet. Pile on the power, kick in the afterburners, pull up on the stick and the sky's the limit.

> "The flight characteristics of the planes make flying really simple and too easy to be realistic. I suppose this could be a bonus for the less proficient pilot though."

I have just one other criticism and that is the instructions supplied with the C64 version are the same as supplied with other versions. Although the operating instructions mention this as an "important note" I would have thought the differences far too great between the C64 and the Amiga versionts that they would warrant separate instructions. There are seven bombers to chose from on the Amiga and I could only fly the F-111 on the 64 version. The enemy you could fly against on the Amiga version totaled seven also whereas the 64 has only three. These added luxuries shouldn't have appeared in the documentation as the C64 owner feels that he has missed out on some goodies.

Now I have got these bad things off my chest, let's start with the things that make Fighter Bomber great and real fun to fly.Firstly you have a choice of flight training using a free flight mode.

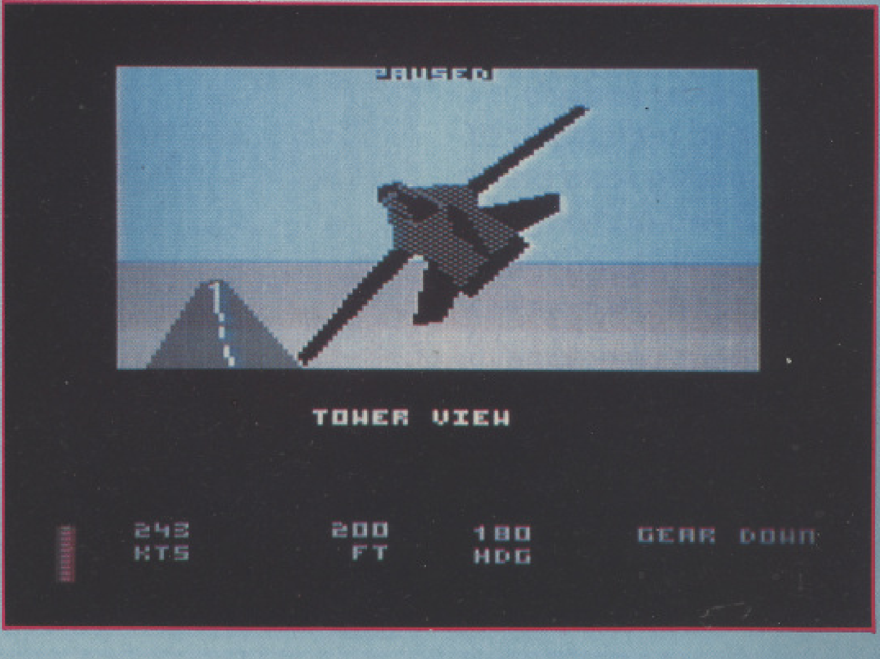


There're four situations you can chose from, either on the runway, at 30,000ft, over a bridge for bombing practice, or lined up on the final approach to the runway. These choices will soon have you proficient enough to take on the enemy in the first of the series of varied missions.

> "There are another ten keys that select the various views from inside and outside the cockpit along with your defensive chaff and flares keys."

As you progress the missions become more and more difficult and the enemy harder to shake off your tail. To begin your mission you are told the objectives and given a map showing targets. It's then on to chose the weapons you think are the best to tackle the difficult situations you'll be confronted with. Mistakes here and you are as good as dead before your wheels leave the ground. Selecting the right tools for the right job is all important and can be found in the operating instruction manual. Details of the effectivesness of the many weapons available make necessary reading if you are to succeed.

There are four types of missions each having four different operations that you have to complete, as you do so, each flight is logged onto disk automatically. The aircraft controls are simple with only a dozen keys and the joystick to keep you in the air. There are another ten keys that select the various views from inside and outside the cockpit along with your defensive chaff and flares keys.



After having had a chance to fly the really amazing Amiga version I suppose I must have a few reservations about the C64 Fighter Bomber. Memory limitations of the the 64 have made this a very poor substitute, but isn't life like that! Everything can't be as good as it is on the Amiga so Activision have had a go at giving us menials the best experience they can, a great simulator, a great set of missions and a great time.

B.C.

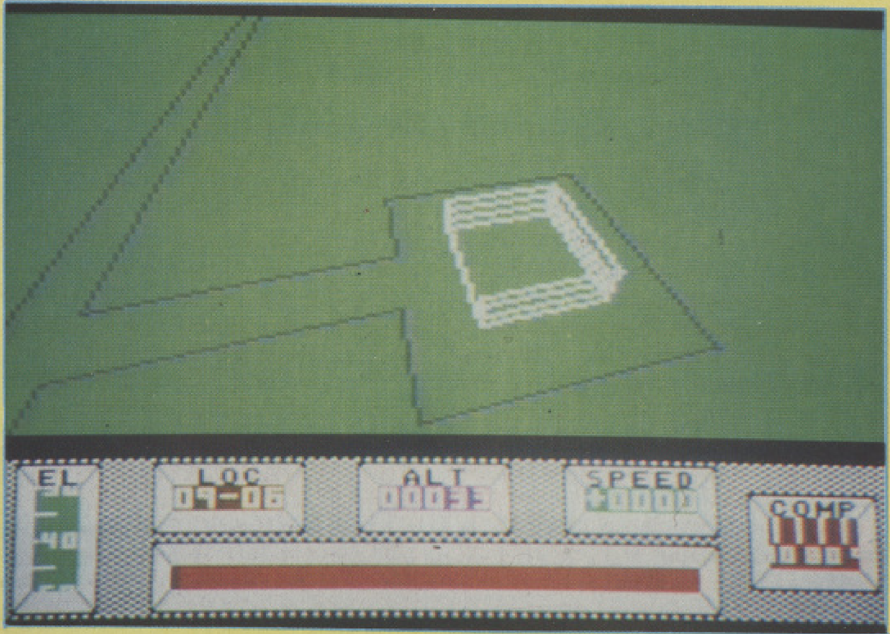
Graphics	70%
Sound	40%
Playability	70%
Overall	74%
Price £29.99 (disk)	

Memorable Moments

The 1980's have been the decade of the beginning and the development of the computer game. Tony Horgan looks back to the time when he was still knee high to a Space Invader

It's all very well someone describing a game as a Pole Position clone, or another Jet Set Willy derivative, but if you're new to computer gaming, that makes about as much sense as Japanese to an Elephant. (What? You know a Japanese elephant? Lucky you!) It's said that there's no substitute for experience, but it's really nothing a brief history lesson can't cure. Leave it to us, and soon enough you'll know your onions like the back of your hand. (Japanese? Elephants? Onions on the back of your hand? Do you mean bunions or are you going off your rocker, Horgan? You must have been playing too many computer games! Ed).

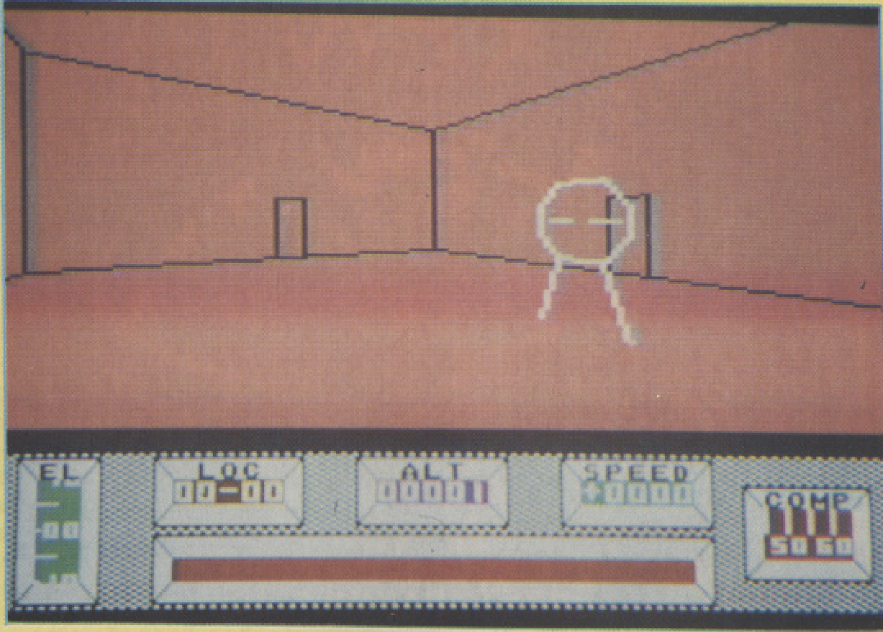
> ***"The monochrome display was laughably simple by today's standards, consisting of just a winding road made up from two converging lines of moving blocks."***



To this day, it's a common belief among non-computer gamers, that Space Invaders is still the game that everyone's playing. Unfortunately I had no diary about my person to make a note of the date, but I can remember my first encounter with a Space Invaders machine, and it must have been over half a lifetime ago! It was that many years in the misty past, that I wasn't even tall enough to see the graphics, which from a viewpoint of about three feet above ground, were obscured by the lunar landscape painted on the screen-surround! As I trust you can understand, the arrival of the table-top machines was a godsend!

Familiarity with the machines that followed soon after, such as Asteroids, Defender, Scramble and Pacman, is widespread. After the initial excitement of Space Invaders, the boom in arcade video games blew itself out to some extent, after which the vast majority of arcade-goers were teenage boys, rather than the wider ranging cross-section of ages and sexes that had previously taken an interest. Also around this time, home computer games took off in a big way, thanks to Atari's console for getting the ball rolling, and the arrival of cheap home computers from Commodore and Sinclair. As the relatively limited Atari console died out, people began to realise the games potential of the programmable computers. Anyone with a good head for figures could sit down with a programming manual, and attempt to knock up their own version of Space Invaders, and many did. Those adventurous enough to dabble in machine code, wrote games that were good enough to put on the market. Inspired by the latest arcade machines, cut down versions of the current favourite coin-ops appeared from enthusiastic part-time programmers everywhere.

3D racing games had been around in the arcades since the start. Probably the first of these to use computer graphics was Night Driver. The monochrome display was laughably simple by today's standards, consisting of just a winding road made up from two converging lines of moving blocks. In some of the less up-to-date arcades, you could find similar games which used projected images of cars on a looped road. A third technique used for the same end, was vector graphics. This forerunner to the popular coin-op Hard Drivin, was limited to a display of white on black wire-frame graphics, which, like Hard Drivin', also featured angular cows among its hazards. Once technology allowed, Atari released their full colour 3D racer Pole Position.

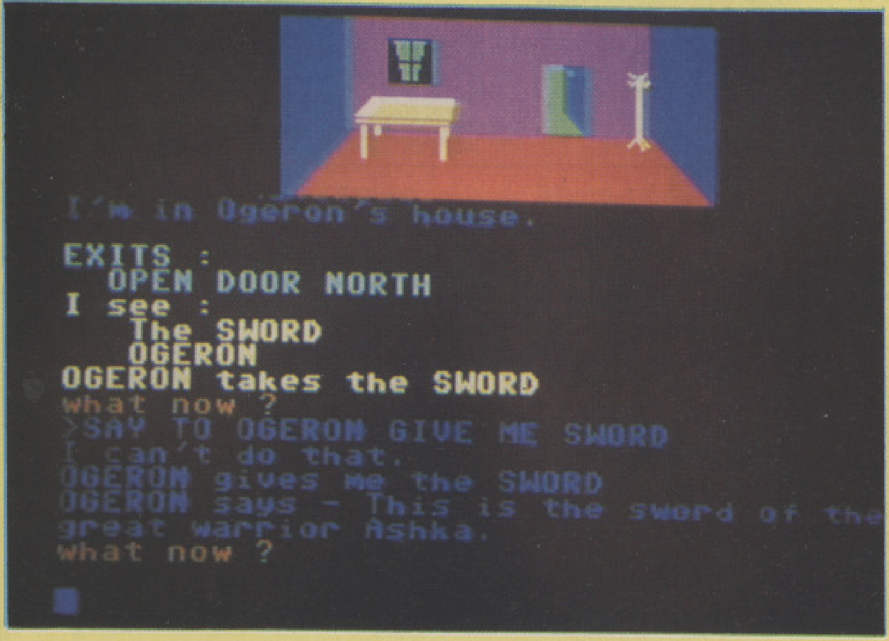


> ***"Only dicey clones of Kong were available, and Manic Miner was one of the first well-programmed and playable platform games to hit the shelves."***

Derivatives and clones of Pole Position were doing the rounds long before the official conversions were released. The Spectrum saw some of the better examples, such as Full Throttle, the more serious Chequered Flag, and one of the best ever games of its type, 3D Deathchase, which had you speeding through a gradually thickening forest. For many, Pitstop II is still the best 3D racer on the 64. Featuring a horizontally split screen, it allowed two people to race each other on the same circuit. With less bold graphics than most recent 3D racers, it's faster and smoother than any of those released last Christmas, and plays even better into the bargain. It is, if you are lucky, still available as at budget price.

For a time after the dawn of the 3D racer, a series of new themes appeared one after the other. The first of these revolutionary ideas was the platform game, pioneered by the coin-op Donkey Kong. Just when Donkey Kong was at the height of its popularity, Matthew Smith came out with his now famous Manic Miner. Only dicey clones of Kong were available, and Manic Miner was one of the first well-programmed and playable platform games to hit the shelves. It was also said to have been inspired by the American hit Miner 2049er, which never made it big in the UK. Platform games still had a place in everyone's heart when the sequel, Jet Set Willy was released. Now a millionare, living off the fruits of his mine, Willy had the enormous task of clearing up after a party in his equally enormous mansion. The gameplay continued in a similar vien, but now you were free to roam the many screens in any order your chose. By the time Willy III came along, this time without the coding of Matthew Smith, the bubble had burst. The game was merely an extended version of Willy II, and was a big disappointment.

Soon after, Ultimate were coming up with similarly original concepts. Originally Spectrum programmers, they released the influential Atic Atac, a multi-screen arcade game with adventure overtones, one of the first popular arcade adventures. Underwurlde continued and developed the theme, but it wasn't until the release of Knight Lore that Ultimate's finest hour arrived. The game's extremely original format put the multi-screen platform game into an isometric world, entailing all sorts of 3D collision detection and clever sprite control behind the scenes, which worked to excellent effect. Ultimate attempted to repeat this success, by releasing a number of arcade adventures for the 64. Although fairly playable, Entombed, Blackwych and the rest couldn't match the previous releases. Both Bubble Bus and Odin used the themes of Atic Atac and Underwurlde as a basis for some excellent games of their own, including Nodes of Yesod, Arc of Yesod, Wizards Lair and Starquake. Odin and Bubble Bus have since disappeared, and Ultimate are now programming for the Nintendo console under the name of Rare.



```
I'm in Ogeron's house.
EXITS :
   OPEN DOOR NORTH
I see :
   The SWORD
   OGERON
OGERON takes the SWORD
what now ?
>SAY TO OGERON GIVE ME SWORD
I can't do that.
OGERON gives me the SWORD
OGERON says - This is the sword of the
great warrior Ashka.
what now ?
```

continued on page 52

continued from page 51

KEN TILL
BY DEREK
BREWST
MASTERTRONIC

The next craze among the computer gaming world was triggered by the Track and Field coin-op. Some bright spark had the idea of simulating physical excercise by moving the joystick as fast as possible from left to right; the stick waggler was born. The idea was simple: the faster you waggle the stick, the faster your on-screen persona would run. (Thank you very much said the joystick manufacturers!)

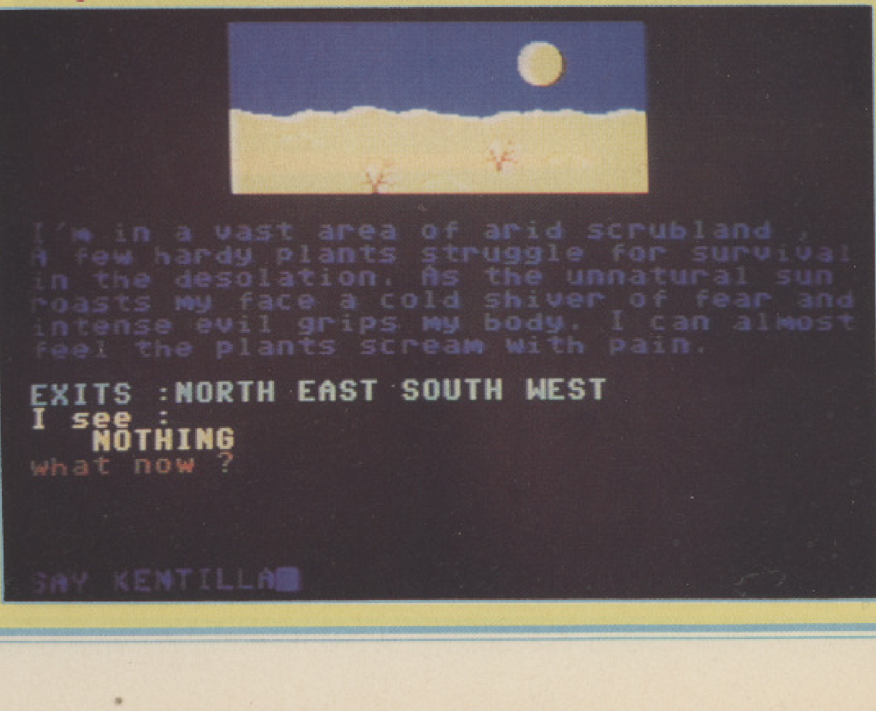
> ***"Although Fist was the first one-on-one karate game for home computers, it was a variation on the Karate Champ coin-op, which itself was to be converted to the 8-bit machines some years later."***

It was such a simple system, that anyone could write the logic to drive such a game, even if it was in basic. In fact, I remember writing a version of Track and Field myself. It was still early days as far as the 8 Bit computers were concerned, and the standard of commercial games left a lot to be desired. Cashing in on the new idea, a few software houses released chronically unplayable Olympiad games, and it was left to Ocean to come to the rescue. Daley Thompson's Decathlon, along with Activision's Decathlon, was the first decent stick waggler to play at home. One of the first games to be in heavy demand, Daley's Decathlon highlighted the incompetance of the high street chains' stock buyers, who would inform disappointed customers that they had only ordered five copies of Decathlon, all of which had gone in the first hour, and try to tempt them to one of the load of obscure Space Invaders clones sitting on the shelf.

Summer '85 saw the first beat 'em up hit the home market. The Way of the Exploding Fist, or just Fist to its friends, presented the whacky idea of giving the player sixteen different moves to control. After the dominance of standard up, down, left and right movements, this was difficult to grasp. Although Fist was the first one-on-one karate game for home computers, it was a variation on the Karate Champ coin-op, which itself was to be converted to the 8-bit machines some years later. The karate bandwagon supported a number of games, most notably the exceptionally delayed International Karate, and the more original Barbarian. When IK was finally released, other than its lack of originality, it could hardly be faulted. Backing up the main game were bone-crunching sound effects and an excellent music score from Rob Hubbard. Many still rate the IK soundtrack as one of Rob's best ever. With the title tracks and in-game tunes of Monty on the Run and Commando, he was the man everyone was talking about. His freelance capacity resulted in his supplying all manner of games with soundtracks, from the shoot 'em up Sanxion, to the adventure game Kentilla. However, he wasn't always the golden boy of computer music. For a time, he seemed to be everywhere, and almost every other budget release would have one of his tunes tacked onto the front. No doubt due to the intense workload, his music began to sound all too familiar, and his reputation of classy musician turned to one similar to the "purists'" view of the pop world's Stock Aitken and Waterman. Sure enough, the tunes were catchy, but there was nothing much new on offer. Nevertheless, he managed to resurrect his reputation, before being poached by Electronic Arts, who swiftly shipped him Stateside, since when there's been very little heard from him, with the exception of the superb Skate or Die theme.

Rob Hubbard's departure left a vacancy that has never since been filled. His nearest rival, Martin Galway, once Ocean's in-house musician, has been rather quiet since teaming up with Sensible Software, authors of the hits Parallax, Wizball and Microprose Soccer, prominent games among my all time 64 favourites. With so many to choose from, I'd be hard pushed to name any one game as an absolute favourite, but the shortlist would definitely include such greats as Mercenary (a proven cure for unemployment blues), Racing Destruction Set and Delta, but then what would I know?

T.H.



```
I'm in a vast area of arid scrubland ,
A few hardy plants struggle for survival
in the desolation. As the unnatural sun
roasts my face a cold shiver of fear and
intense evil grips my body. I can almost
feel the plants scream with pain.

EXITS :NORTH EAST SOUTH WEST
I see :
   NOTHING
what now ?



SAY KENTILLA█
```

CHART SHATTERING EVENTS !

Well, the Batfloppers bit the guano (Of course you knew that meant those stinky bat droppings David Attenborough loves, didn't you?) to be replaced dramatically by USG's latest Outrun (this story could outrun and outrun!)the Turbo version. Yet another driving game (yawn...). Tony ("I can't take a hint") Horgan didn't think much of it but you out there with the jinglies in your pocket bought enough of it to push it up there to the top of your and our list at the very first try. No more new entries on the full price 64 chart with all the Great Big Or Now Even More Enormous Software Companies cashing in on their pre-Xmas releases.

New Numero Uno for the Amiga is Microprose's popular Stunt Car Racer which has got to be one of the best games released in 1989,for which it was duly recognised at the Software Industry's awards. Psygnosis' hefty priced Shadow of the Beast makes a welcome re-entry but watch out for the highest new chart shatterer, Ocean's Operation Thunderbolt. That is really moving! And it isn't a driving game!

Budgeteers have put good ol' G'n G at the Top of the Heap but Sensible's masterpiece Wizball goes on selling. Good thing too!

Z.M.S.

(C64) GAME TITLE	COMPANY	LAST MONTH	RATING	PRICE
1. Turbo Outrun	U.S. Gold	(–)	00%	£9.99
2. Ghostbusters II	Activision	(3)	52%	£9.99
3. Batman – The Movie	Ocean	(1)	70%	£9.99
4. The Untouchables	Ocean	(5)	74%	£9.99
5. Stunt Car Racer	Microstyle	(6)	80%	£9.99
6. Hard Drivin'	Domark	(8)	70%	£9.99
7. Shinobi	Virgin	(7)	76%	£9.99
8. Powerdrift	Activision	(2)	87%	£9.99
9. Indiana Jones Adventure	U.S. Gold	(9)	69%	£9.99
10. Continental Circus	Virgin	(4)	50%	£9.99
(AMIGA) GAME TITLE				
1. Stunt Car Racer	Microstyle	(3)	90%	£24.99
2. Hard Drivin'	Domark	(5)	80%	£19.95
3. Xenon II	Imageworks	(1)	90%	£19.95
4. Operation Thunderbolt	Ocean	(–)	00%	£24.95
5. Shadow of The Beast	Psygnosis	(–)	00%	£34.95
(BUDGET) GAME TITLE				
1. Ghosts and Goblins	Encore	(3)		£2.99
2. Wizball	Hit Squad	(1)		£2.99
3. Rally Cross Simulator	Codemasters	(4)		£2.99
4. Paperboy	Encore	(2)		£2.99
5. Sidearms	Kixx	(–)		£2.99

Adventure

BY ANDY MOSS

COMMENT

Well the nineties decade is now well and truly upon us, and if it turns out to be anything like the eighties was, then we are in for a tremendously exciting next ten years. It wasn't so long ago that I was reviewing Vic 20 adventures, and cartridge based consoles were all the rage (remember Intellivision?). Whilst consoles are making a comeback now ,the dear old Speccie changed all the old technology, giving us extra memory that till then we had only dreamed of. In no time at all, along came the 64 and then the 128, and now of course the fabby Amiga . What all that has meant in Adventuring terms is that games have had to adapt to the larger memory and graphic capabilities of the new machines and by that I mean not just adding extra rooms or pictures, as was the case initially, but much more complex animation and sound. In fact it has almost rung the death bell for the traditional text adventure if you are to believe the likes of Level 9 who are convinced of it. Me, I'm not so sure. The text adventure is really like a book, and since when have books stopped selling?

I would like to think that we will be spoilt for choice this decade, with programmers conjuring up new software techniques that bring us ever closer to real life role playing, and good meaty text driven adventures to complement them. I suppose in the end it comes down to what is commercially viable, and that if enough people buy both, then both will continue to flourish. If not.... well so be it, we will just have to wait for one of them to make a comeback, won't we?

Speaking of more complicated plots and features, have you noticed lately how much more preparation you have to do before you can start playing the blessed games these days. Most new adventures require you to make copies of the disks, then format blank ones, rename them to something else, pass an anti piracy block that has you delving through manuals trying to find a word, or an emblem or a strange object. Then when you have done all that, and you are a third way through the game you find that the third disk didnt copy properly and you have to start all over? My one plea is that if games are going to get more complicated, can you please try to simplify the set up and not subject us to a Krypton Factor first. Let me know your thoughts dear readers, till then let's go to the news desk...

ADVENTURE NEWS

CRL BOUNCE BACK

Remember CRL? The house that gave us Rod Pikes suite of horror adventures (who incidently is halfway through a new one, no title as yet) is soon to release SEARCH FOR THE TITANIC which is billed as an 'oceanographic adventure' and is based on the true stories of the ships' survivors.

ELECTRONIC ZOO HAVE NEW EXHIBITS

With ex-Microprose boss Stuart Bell now at the helm, Electronic Zoo are shaping up for 1990 with the capture of US label Cosmi for Europe. They produced The President IS Missing, which I raved about last year, and are following that up with Presumed Guilty, another espionage thriller.

MINDSCAPE KLING ON

Star Trek V has been promised soon, after Mindscape snapped up the rights to the latest movie, and graphically it is looking very nice indeed. Origin have a new title in the wings called KNIGHTS OF LEGEND, which is set in the days when men were men and chivalry was the order of the day. Let's not forget Tangled Tales as well which should soon see the light of day, and also WINDWALKER, a martial arts rpg. Also remember Balance Of Power? Well, a sequel is well under way called GUNS AND BUTTER and promises plenty of economic strategy.

MICROPOSE HAVE PLENTY

Still in bullish mode, Microprose continue to involve themselves in quality titles like SAMURAI an action adventure in the Lords Of Rising Sun mold, and of course the biggie MIDWINTER written by none other than Mike Singleton.

MAG SCROLLS SIGN UP WITH NEW PUBLISHER

Virgin Mastertronic have agreed terms with Magnetic Scrolls to take over publishing their adventures. This is due in no small part to David Bishop, who has not only written their new adventure, but has become head of Virgins adventure and RPG product line.

Anita Sinclair said, 'We have had a number of substantial offers, but what made me choose Virgin was their commitment to the adventure market, and they are nice people to do business with.' Hear, hear!

ADVENTURE HELP DESK

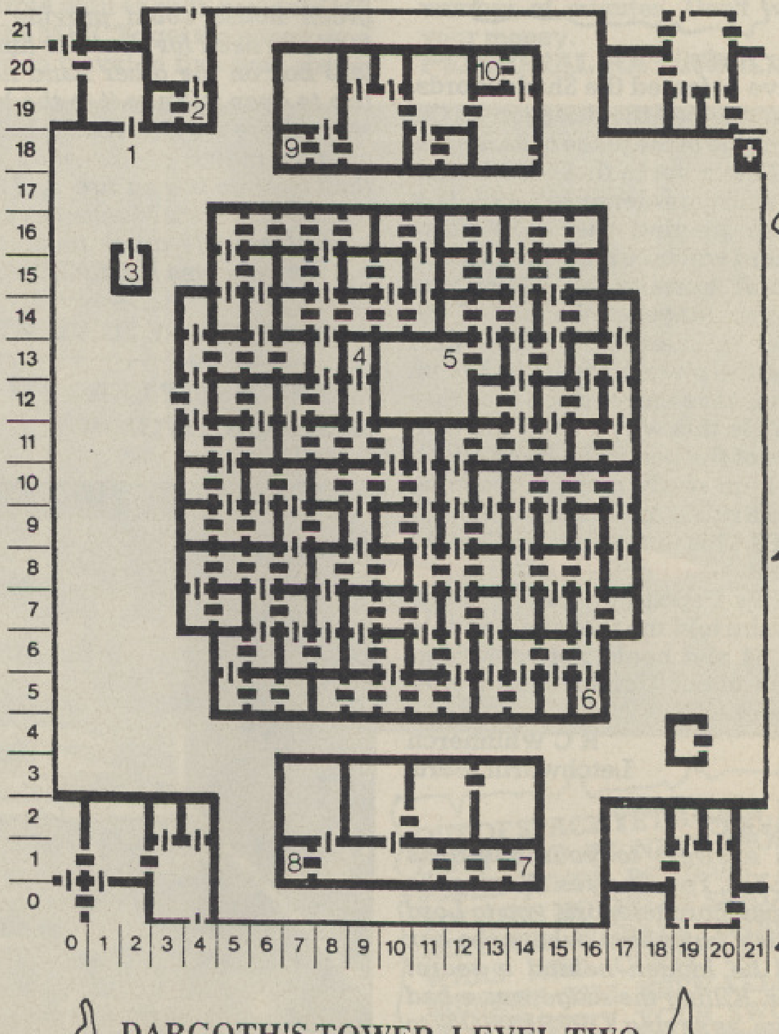
TIPS ON INDIANA JONES AND THE LAST CRUSADE

In the castle, go to the cloakroom and use the servants uniform to slip into disguise. Then walk down the hallway to the guard. Offer him the painting that you found in your fathers house, and he will let you go. Keep a careful eye on the sequence after that, when the guard gives your painting to someone else. Continue on to the room with a chest in it, and look inside to find an officers uniform. Unfortunately, it does not fit, but take another look to find a useful item. Take the stairs back down to the first level. Use the key you found on the brass lock and you will find a nazi uniform that does fit. Now you can go in for some guard frightening with your new found status.

THE BARD'S TALE II SOLUTION CONTINUED THIS MONTH... DARGOTHS TOWER LEVEL 2

Darkness! 1. After much blind exploration, the party made its way to a door that led out of the blackness. There war wraparound magic here. 2. We found a small room, and within a voice said, 'THE SWORD OF ZAR CAN ONLY BE DRAWN BY ONE WHO HAS FACED THE BATTLETEST'. 3. In a small isolated room we found a poem etched on the wall.. 'IN DARKEST CALM, HE STALKS THE MEN, WHO SEEK THE WAND, AND READ THE TEN. HIS CRY IS CALLED BUT NONE KNOWS WHEN.'

Shofar fell into a trance after reading it, and mentioned to the rest of us that the important part of the poem was the bit about 'reading the ten'. We moved on. In the middle of this level lies a hellish maze and at 4. we found a message on the wall. THE DEATH SNARE IS NOT ON THE FIRST THREE LEVELS OF THIS TOWER. At 5. we found a larger room in the maze along with seven statues. When we tried to examine the staues, the creatures came to life and fought us! Eventually we managed to destroy them all, and Andreas pointed out that porbably they were the Battletest that was spoken of by the voice. At 6. we found a teleport that got us out of the maze to 7. where behing a door at the end of the hall was yet another teleport, which took us to 9, and then nearby we found stairs (10) and rested before continuing up... CONT NEXT MONTH.



DARGOTH'S TOWER, LEVEL TWO

Behind the Mona Lisa is a vault. The sequence where you are tied up with dad is tricky and involves you pulling the chair over to where the suit of armour is. Push the suit over and if you are positioned correctly, the axe will cut through the rope. Push the statue next to the fireplace and leave through the secret door.

TIPS ON SPACE QUEST III

The only way to defeat the killer android is to lure it back past your ship to the arch where the killer suckers are. As the android is invisible keep a check on its footprints. If it goes under the suckers, they will kill the killer, and leave its invisibility belt for you to pick up, using the toy you bought from the junk shop.

MAILBAG

Dear Andy,
I have defeated the Shadowlords, have mapped the dungeon on the other side of the place of darkness, but I have yet to find the box that the shifty gardener talks of. Is it where playing the right harpsichord will take me? Have I made a fatal mistake by killing the grumpy mage at the top of the tower in Skara Brae? How do I cross the river in the level 2 room with a cave entrance on the other side? Is this why I need the contents of the box for? I have a feeling I am really close to rescuing Lord British, am I right?

PS This is my first RPG and I love it

PPs I spoke to 'guiding light' and she told me that she had sold her 64 and could not remember much about Ultima V. Not very helpful eh?

R C Whinnerch
Letchworth, Herts

Dear R C
The answers to your questions are; Yes. Yes. And yes. Playing the harpsichord teleports you to Lord British' chambers, where the box will be hidden behind a secret door. Killing the mage was a bad move, as saying 'OPPRESSION' to him will make him give you a clue. You cross the river by taking the leather down.AM

Dear Andy,
I have been playing 'UNINVITED' for quite a long time now, and now I am really stuck. The last thing I did was to give the cookie to the red demon in change for a key. I cannot seem to use it anywhere, one locked door leads to the Magisterium. How do I get in? I cannot open the hingeless box either. I hope you have the answers to my problem. Also do you know of any adventures for the AMIGA which are similar to THE THREE MUSKETEERS . I have played this adventure and liked it very much.

Ericole Friteri

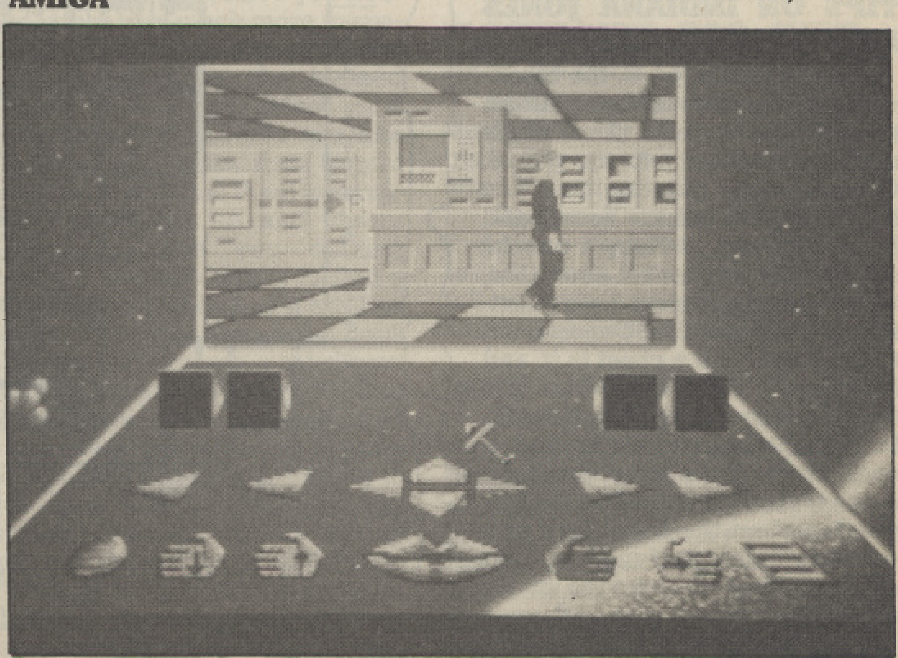
Hey, would Andy let you down? The key to the Magisterium is actually a gem which you insert into the gem shaped hole. Inside is a demon who will not let you through because it is hungry, and the plant that you watered in the green house could provide the food you need for him. The hingeless box on the other hand need fire to open it. Take it to the hallway where the firewood is lieing, operate match on firewood and then operate box on fire, and that will open it. For a Musketeer-type adventure only much much better, try Infocoms JOURNEY. AM

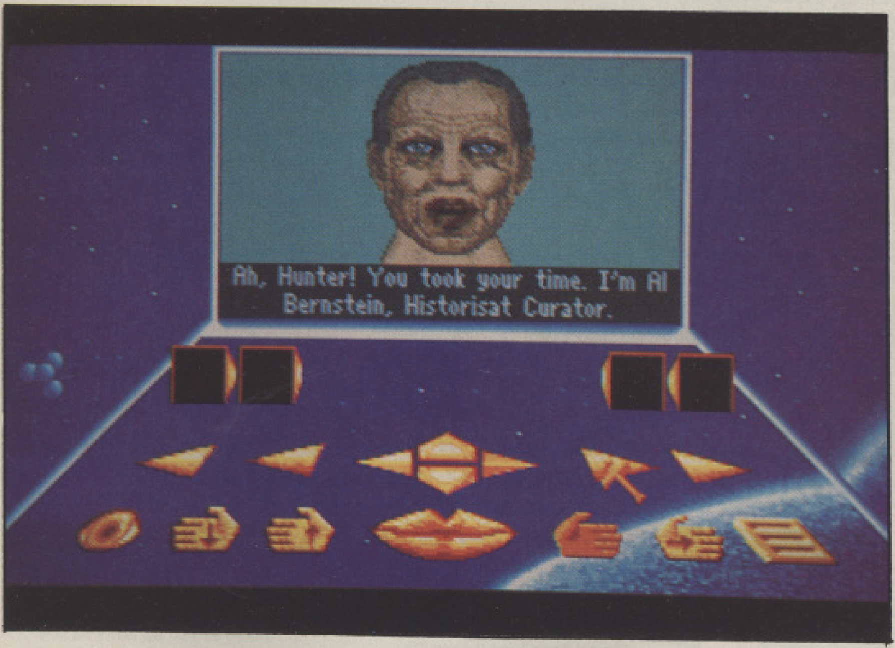
ADVENTURE REVIEWS

LEISURE SUIT LARRY II
SIERRA/ACTIVISION
AMIGA

Well ol' Larry Laffer is back, looking for love in all the wrong places, and Al Lowes humour is also back with even sharper wit than before. This time around, Larry gets mistaken for a spy who just happens to look like him, and more to the point, Larry quite by chance says the pass words needed to be given a certain item that causes chaos in the underworld. Far away on a Caribbean island , a mad doctor is waiting to put the final touches to his world domination plan, and Larry has fallen into the middle of it all. The adventure opens in Los Angeles, with you left without a penny to your name, (actually 1 dollar if you can find it). By chance you buy a lottery ticket and find yourself outside the TV studio where the draw is to take place. After that you manage to not only win a cruise on the American version of Blind Date but also the million dollar lottery as well. From there its onto the ship, and then to the tropical island to a confrontation with DR Nonookie. If I am to be honest I would have to say that the graphics whilst colourful are not up to the standard of Space Quest III nor the sound, but that said, the plot more than compensates for it. With lines like 'I'm not just looking for the right woman, I'm looking for the right- now, woman', Larry is every bit the womaniser that he always was.

For those of you unfamiliar with Sierra adventures, their




Ah, Hunter! You took your time. I'm Al Bernstein, Historisat Curator.

games are all animated 3D stories, with text input, and each location is loaded in from disk. This does make for a longish wait between rooms, but most of the time, the objects you need to find are hidden fairly near each other. Using the mouse or keyboard, you guide your character around the screen into and out of buildings etc. Sierra really do have style all their own, and with the new improvements they have made to their Amiga interpreter, their quality is a shining example to every one else.

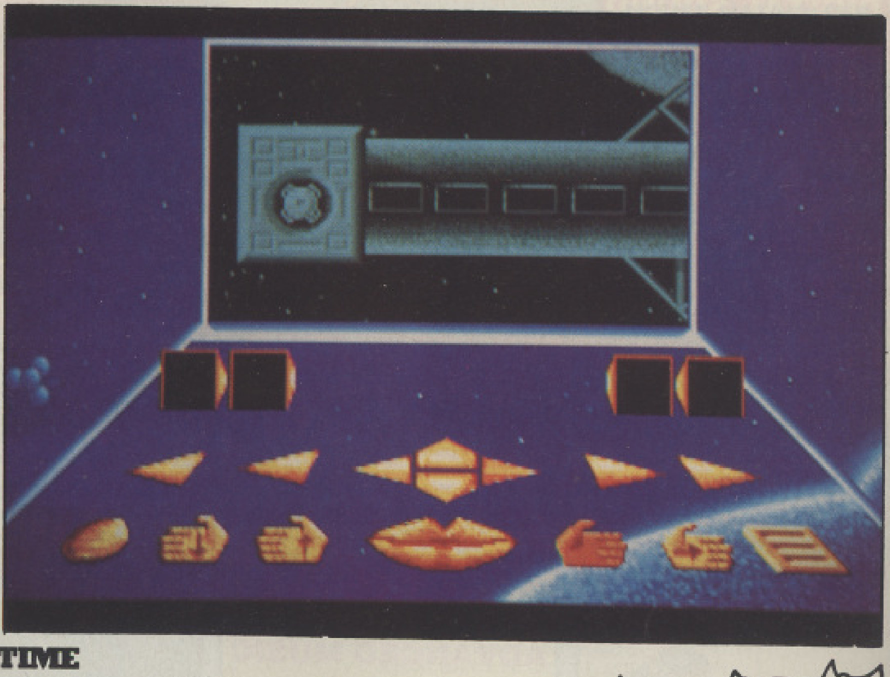
PERSONAL RATING...... 9

TIME

EMPIRE

64/AMIGA

Time is the brainchild of Oxford Digital Enterprises who had the idea of creating an adventure that had you running through history in search of the Amulet of Merlin. Unlike Level 9's Lords Of Time, TIME is completely animated with over 100 locations using an icon driven system to install commands. The plot centres around you as an intergalactic agent, summoned to the HISTORISAT satellite which orbits Earth. There you discover that very shortly an android will start to replicate, and that this will eventually lead to the destruction of the Human race. The game is a race against time to find a way to destroy the MEK before it starts procreating. The way is to use an amulet to charge up a prototype android with enough power to kill off the MEK. To get the power, you need to travel to five time zones, give the amulet to some famous powerful characters who will charge it up, return to the satellite, charge up the android and so on. There are puzzles to be solved at each location, although the game follows a fairly linear pattern. The icons also take a bit of getting used to, particularly the USE OBJECT ON icon which is a bit fussy. On the whole though, an enjoyable romp through Time which has all the hallmarks of a long runner and maybe a sequel?


TIME

PERSONAL RATING...... 7

BRIDE OF THE ROBOT

Free Spirit

Text/Graphic

The third in the Adults only series of the adventures of Brad Stallion skipper of the big thruster spaceship. Following Sex Vixens From Space, and Planet of Lust, Brad is called upon this time to rescue Miss Galaxy who has been kidnapped by a runaway sex mad robot. If you like adventures that kill you instantly with one wrong move, use no real text input to speak of, and have a ridiculously fussy mouse/ screen control, all in the name of a few sexy pixels and some lewd text this is for you. The actual number of locations are around 25 and the game can be completed in around the same number of minutes. Don't waste your money.

PERSONAL RATING...... 3

OUT OF SPACE YET AGAIN, BUT FEAR NOT AS NEXT MONTH SOME JUICY REVIEWS FOR YOU. THE HOUND OF SHADOW, SENTINEL WORLDS, DRAGON WARS AND CURSE OF THE MUMMY. TILL THEN FELLOW HEROES MAY YOUR SWORDS NEVER LOSE THEIR SHEEN.

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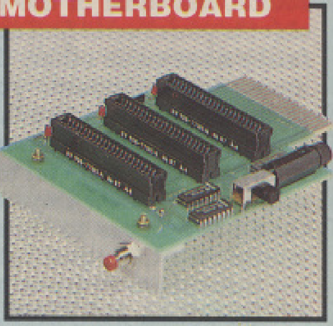

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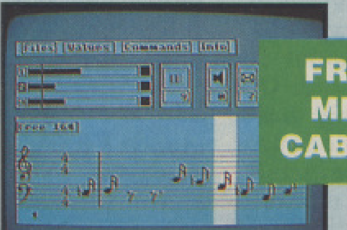

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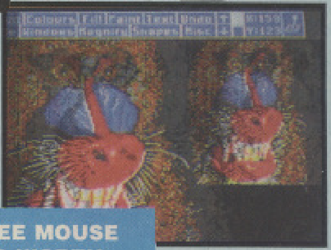

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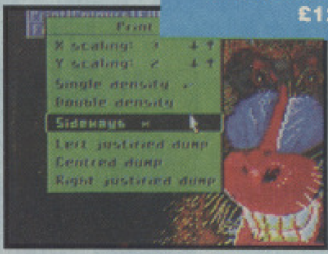

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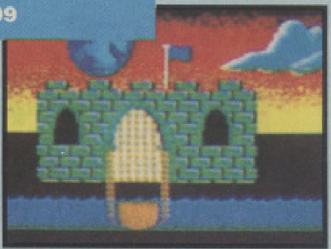

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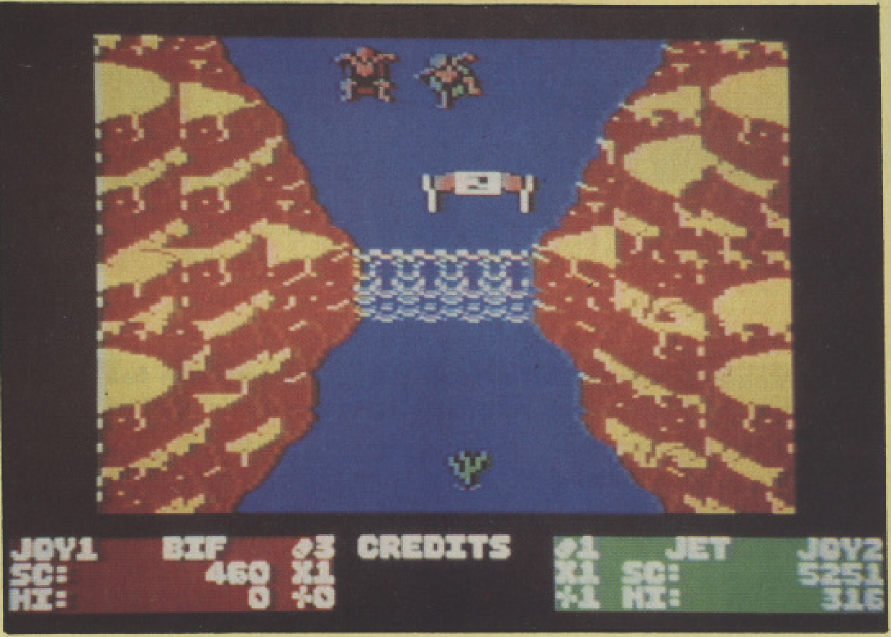
Toobin

Domark

Toobin or not Toobin, as The Bard of Avon once wrote. Yes, they even had inner tube river races in those days! The trouble was that then, if you fancied a spot of toobin in the bleak mid-winter, you had to be prepared to fit an ice breaker on the front of your vessel before setting off down the river. Things are easier today, as thanks to Domark, you can now have a go at it without the fear of your toes dropping off from frostbite!



As in the coin-op version, Toobin can be played by either a single player, or two simultaneously. The idea is to make your way down the river to a beach party. The coin-op used five buttons for each player, four controlling forward and back paddling on both sides, with the fifth used for throwing objects. The 64 version gives you the choice of either keyboard or joystick control, the keyboard option giving a feel closer to that of the coin-op.

> *"The less said about the tune and sound effects the better."*

The game plays rather like the slalom canoeing event from Summer Games II. Along the river are a series of gates, through which you have to guide your character. One of your first problems comes from the fly fishermen lining the bank. They'll threaten to burst your fragile tube, unless you can take them out with a well-aimed beer can. Hazards are also supplied by Mother Nature in the form of driftwood and rocks.

Things start out as you'd expect, with the sandbanks and rocky cliffs making for a scenic, and fairly laid back afternoon's toobin. Before long though, your route takes a turn off the beaten track, taking you to some really wierd places. Soon enough you'll find yourself floating through Amazon jungles, swamps and city sewers. The enemies and dangers are as diverse as the settings, but unfortunately, unless you've played the arcade machine, you'll be hard pushed to figure out what most of the sprites are supposed to be. That's a shame, as the coin-op relied on its sharp cartoon-style graphics to convey the humour of the game, with details such as the blowpiping Amazon warriors and mischievous punks. Both backgrounds and sprites are blocky and poorly detailed, which makes discovering the new scenes a bit of a disappointment. The less said about the tune and sound effects the better.

Toobin made a great coin-op, but it doesn't have the staying power that a home computer game should. The coin-op is a good laugh in small doses, but I wouldn't want to play it for more than a few games at a sitting. The same is true of the 64 version. Toobin would make a pleasant budget game, but I'm not too sure of its full price value.

T.H.

Graphics: 58%
Sound: 34%
Playability: 62%
Overall: 61%
Price: £9.95
£12.95

AMIGA

Toobin on the Amiga is noticably slower than the 64 version. The graphics are clearer as you'd expect, but could still be a lot closer to the those of the original. It loses out for its less responsive controls, but notches up a mark with its boppy steel band title tune. Other than that, the same criticisms apply, so it's unlikely that many will be playing it long after the first few days.

Graphics: 60%
Sound: 65%
Playability: 57%
Overall: 50%
Price: £24.95

HORGAN'S HINTS

Roll out the barrel, crack open the champagne and bring out your dead! A little celebration is in order, for this month sees the first cut-out-and-keep edition of Horgan's Hints! From now on you can keep your hints in pristine condition, just by following these simple instructions. First, take a pair of round-tipped scissors. Next, carefully cut along the inside edge of the page (you may want to get a grown-up to help you with this bit). Now store the cut-out-and-keep hints in a dry place, away from strong light and odours. Next month I'll tell you how to make your very own exclusive Horgan's Hints binder.

64

Turbo Outrun

This cheat from Max Joseph didn't work on my pre-production copy, but you may as well give it a go. To jump from stage one to five, pause to the game and press the ":" key. I'm told this also works on later levels.

Around the World in 80 Days

Geir Olsen informs me that reseting the game, then typing SüYüSü ü2ü0ü6ü4ü will move you on to the next level.

Dominator

During level one, kill yourself and tap the spacebar as you explode. The level should scroll itself to the end, but you can re-enter the action at any time by pressing shift, space, and then shift again. Through levels two, three and four, holding down the spacebar will give you invulnerability to the aliens' bullets. Thanks to Jason Nightall for that.

Kick Off

My commiserations go to anyone who bought the 64 game. It's a load of rubbish, but that doesn't make losing any more bearable. Goody and Barfie have drawn these points to my attention, which should come in handy if by accident you happen to load up the game.

1. If you kick the ball at the goalie, he dives out of the way.
2. Run down either touchline, cut in towards the goal and shoot. You'll score 99% of the time.
3. When taking corners, curl the ball in at medium height, and meet the cross with your attacker, who should easily score.

Shinobi

Here's a poke for anyone who bottled out of typing in the listing for the cassette version. For infinite lives, reset the game before entering:

```
POKE 15367,173
SYS 7291
```

Predator

No restart address for this one, so it's for cartridge users only. Enter it at the start of the game for infinite lives.

```
POKE 5672,165
```

Renegade

Here's another for cartridge users. The first gives infinite lives, the second infinite time.

```
POKE 42187,165
POKE 38674,165
```

AMIGA

Chase HQ

Cornering at high speed can be tricky. Rather than trying to steer with a full-lock all the way around the bend, quickly alternate between steering and centring the stick, and you'll round the bend without sliding out and off the road.

Batman The Movie

To activate the cheat mode, type JAM on the title screen, pressing M a few times. You'll know when it's worked, as the screen scrolls on upside-down.

RVF Honda

After each race, the program saves the results to disk, provided it's write enabled of course. If you find yourself in a bad position in the current race, but with a good overall placing from previous races, don't risk having to start all over again in the same class. Take out the disk during the race, and reload with the same rider. You'll now continue from the last point that was saved.

That's your lot for this month.

If you've got any maps, pokes or cheats, sort them out Cecil, get them together Gareth, and wop them in the post.

Remember, there's a bag of assorted stuff for the best offerings each month, so get your pokes, cheats and maps to me now! Here's the address:

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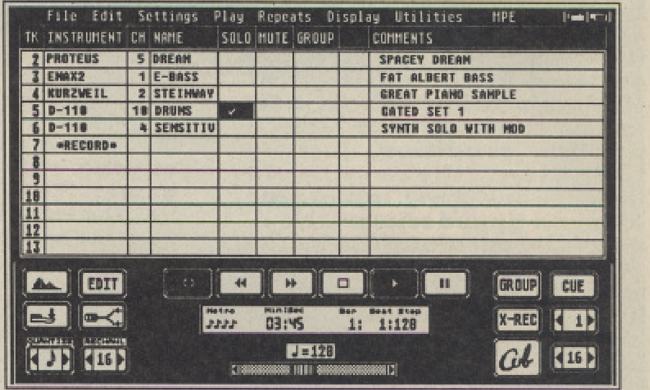

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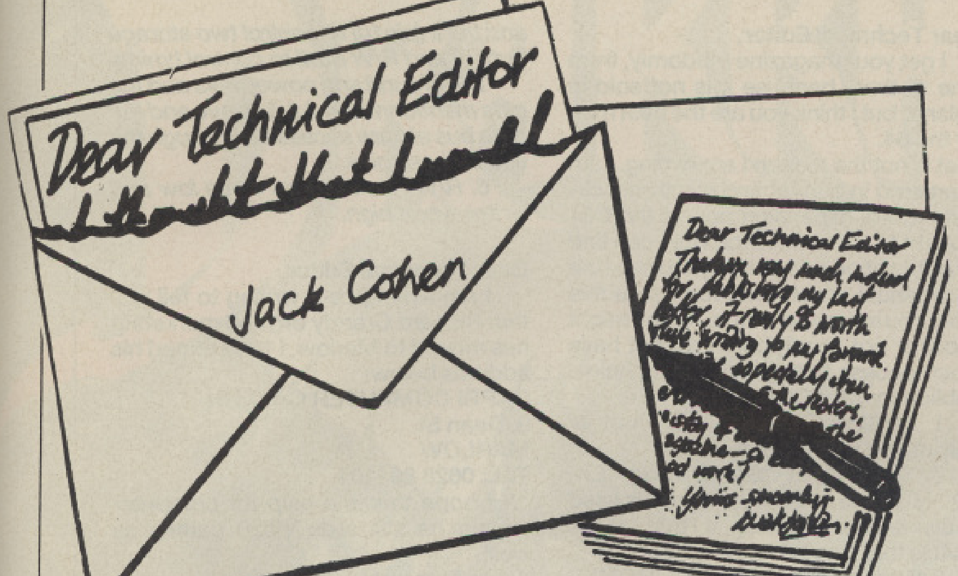


Dear Technical Editor,

Having recently purchased a C64 Light Fantastic package and subsequently become a subscriber to Commodore Computing International magazine I am but a mere novice in the art of computers and more importantly computer programming. So as you can imagine I find your various articles very enlightening if not sometimes perplexing. One particular point that has been bugging me regarding Jan 1990's issue is the following."Page 90" Team draw program.

(1) What do the four letters down the side of each program line signify?

(2) Are the abbreviations, i.e. (CD) (BLU) (CLR) (YEL) basic language or are they just typed in as read?

(3) I notice that one set of brackets is shaped [] whilst another set is shaped (). Is this significant?

(4) Am I trying to run before I can walk?

Despite numerous attempts to load this program in particular, as soon as I get to line 22 and press return the computer responds with "Syntax Error".

Would it be possible for you to explain the above points and perhaps any others that I should be aware of.

Yours Faithfully

D.Climpson

Dear D J Climpson,

1. The four letters before each line number are explained on page 84 of the JAN 90 issue.

The S.Entry program has to be entered and saved before use.

This program when run is a background program which enables you to enter programs which use these codes, such as 'Team Draw' and 'Super 72'.

After entering such a program type '&' on its own (as mentioned on page 84) This will return a S Entry code which should be the same as the final code in each program.

If the number is different then you have made a mistake in entering the program.

2. The abbreviations you mention are a simple way to read the C64 cursor and other control characters.

[CD] means cursor down, so that when you see it in a program listing then you press the 'Cursor Down' key.

[CU] is cursor up so press shift to get the cursor up symbol.

Incidentally these characters are only controls after the quotes symbol ".

Similarly [BLU] is blue and so on.

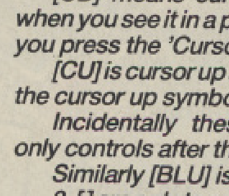
3. [] are only to separate these notes from real text and therefore should NOT be typed in the line.

() should be typed when they appear outside text because then they are part of the basic program structure.

When appearing after quotes then optional unless it alters the meaning of the text.

4. In line 22 after each print statement there is a semi-colon (;) and a colon (:). Have you entered these correctly?

Only type in the codes if you have previously run S-Entry



Dear Technical Editor,

Since the November edition of (Commodore) I have saved the program for Conversion by D.Bailie. It is a very good program. Could you please tell me if the January part of the program is right?

The last line in Decembers issue was (6250) and January started at line (7150), reading through the program it looks as if there should be some program between 6250-7150. If you could please check on this for me I would be very grateful , and if there is some missing could you please send it to me. I think that the Commodore Computing magazine is very good and it would be a shame to miss part of this program.

Thank you for your time and help.

yours Faithfully

T Rogers

Dear T Rogers,

Yes you are correct and there is a missing section.

Look in the November 89 issue on page 84 at line 240 in the Conversion program.

This mentions a line number of 6460 after the ON GOTO.

Dear Technical Editor,

I have got a problem with my C128D with which I hope you can help. Several weeks ago I had to move my workstation to another room, to do this I duly inserted the head vibration protector into the disk drive and closed it. Unfortunatley when I had re-established myself I forgot to remove the card before turning on the power and as the 128D checks the drive on power up the inevitable happened, nothing worked.

Suspecting it might be a fuse, and the guarantee had run out I decided to open the case and have a look for myself, I also removed the cover on the drive unit and found what looked like a fuse but this looked okay. Not finding anything I tried to move the drive heads manually (could this be my un-doing?). Having failed to locate the fault I took it to a repair outfit where they restored power and got it going.

All was fine until I tried to load my Artist 64 disk and after several tries it still wouldn't work. I contacted the repairers and all they could suggest was that the disk was faulty but I new this was not the case as I have since borrowed a friends 1541 drive and successfully loaded it onto my old 64. I have also made a copy of the disk and this will load into the 128D. I am now getting other problems as I cannot scratch a file or format a disk in 128 mode using the HEADER command and several other errors EG. 73 CBM DOS V3.0 1571. 23 READ ERROR.

I have looked this up but they mean very little to me and I am now suspecting that I could have damaged the drive by trying to move it manually, is it possible that I have took the heads out of alignment and if so, can I rectify this myself or will it have to be sent away, or is the fault more serious?

I would be grateful if you could shed some light on the matter for me.

P.S. The drive still loads and saves most programs although some disks BLOCKS do not add up correctly even after using the collect command.

Yours Faithfully

Anonymous

Dear Anonymous,

It seems that you chose the wrong repairers.

Have you tried those who advertise in CCI on the MAGENTA pages?

Also try DB ELECTRONICS on 0245-260874

Dear Technical Editor,

I have just purchased a 1541-11 Disk drive to go with my Commodore 64 that I purchased in the latter part of 1987. My set up now consists of the 64 Computer, a dattessete tape and a star LC-10C printer plus the disk drive of course.

I use Mini Office two that I have had on tape for some time now, I have read up quiet a lot about disk drives and have not had many problems in launching myself into the use of disk drives, and I find them a much faster method of saving and retrieving my letters, and labels, and all the other wonderful things that Mini Office-11 can do, in fact I have just wrote off to Database software to see if it is still available in disk form.

There is just one small problem that is bothering me, and that is what does TPI stand for on a disk because I have tried my old computer dictionary, but there doesn't seem to be any mention of it in there maybe you could fill in this problem.

Yours Thankfully

Tony Wilson

Dear Tony,

TPI means TRACKS PER INCH and it is a measure of the maximum number of tracks that is recommended by the manufacturers to be formatted for that diskette.

Dear Technical Editor,

I am trying to obtain a copy of the "Blue Max" game for my Commodore C64. I think it is a U.S.Gold game. I have tried several places in this area but have been without any luck. I wonder if you could help me with this, and prehaps let me know how I can get a copy. Thankiny you in anticipation.

Yours Faithfully

S.Macsween

Dear Stuart,

Try Supersoft on 01-861-1166 who usually have a collection of older games.

Dear Technical Editor,

I get your magazine randomly, from time to time, because it is not sold in Poland, but I think you are the best mag for the 64.

That is not the reason I am writing. I am interested in connecting electronic circuits to the expansion port of the C64 straight to the processor, but I can find no publications describing it except the C64 manual, which is not very useful this time. You are my last hope. As you might know or not know, here I do not have much access to the western technical publications for C64.

1. Is "Dot Clock" (pin 6) input or output and what exactly is it?

2. what does "GAME" and "EXPROM" stand for? I have heard it is used to disconnect the internal RAM for the C64. Is that true?

3. What about the "ROML", "ROMH", "BA", and "DMA" pins?

4. Is "S 02" (1 MHz-pin E) input or output ?

5. Are all the signals buffered or are they connected directly to data bus, address bus and system bus?

6. Does the "R/W inverted" signal apply to standard (0-write, 1-read)?

Please do not tell me to refer to any western publications, because I do not have access to them. I would be very grateful for the concrete and strictly technical answer.

Do not worry I will understand your answer. I have a lot to do with with microprocessor systems and computers, so I am familiar with the terms used in that job.

Best Regards

Jan Rychter

Dear Jan,

1. Dot Clock. 8MHz dot clock input for the programmers video control.

2. 'GAME' replaces BASIC ROM with external cartridge ROM when grounded.

'EXROM' replaces RAM from $8000 to $9FFF with cartridge ROM when grounded.

3. 'ROML' chip enable selects ROM $8000 - $9FFF when XROM is low needs address bits A0 - A12.

'ROMH' selects external ROM at $A000 - $BFFF (or $E000 - $FFFF, for MAX) when 'GAME' or 'EXROM' is low, needs address bits A0 - A12.

'BA' is Bus Acknowledge. To use pull DMA low. An external device can control the 64 while BA is high.

'DMA' - Direct Memory Access - see 'BA'.

4. By S 02 (pin E) I understand you to be referring to pin E on the bottom of the chip. This pin is a rho2 system clock.

It is essential for I/O timing but it is not necessary for external ROM.

5. Interfaces usually use I/O 1 (pin 7) and I/O 2 (pin10) to control two storage buffers and R/W rho2 to control timing.

The ground and power lines and the pins mentionned in 2 & 3 above and the data bus etc are accessible through the use of these pins.

6. R/W (pin 5) reads when low and writes when high.

Dear Technical Editor,

I am writing I am writing to tell you that Richard Grandy of Capri marketing has moved to Marlow, I have stated his address below:

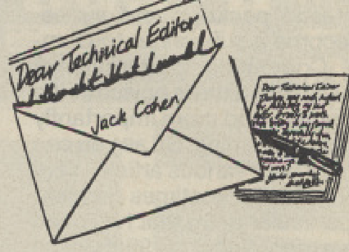
CAPRI COMPUTER CAVERN
9, Dean St.
MARLOW
TEL: 0628 891101

I hope this is a help for computer owners,he still sells Vic20 games as well!

Yours Sincerely

N. Williams

Nick provides info and help for VIC 20 owners.



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Back To Commodore Basics

Coping With Errors

It is not just your typing that can cause problems, there are lots of nasty little glitches just waiting to happen. Peter Gerrard shows you how to stop them being born

All programmers make errors, from those who have only just started out to those who have been working on the Commodore 64 for all of the eight years that have elapsed since its arrival on these shores. Machine Code is unforgiving, and if an error occurs in a program then that's the end of it. No error messages, and probably a locked-up computer that will need resetting as well.

Basic is a lot more friendly, and the Commodore 64 has 33 error messages that can be printed out onto the screen in times of crisis. This won't help you to write perfect programs, because the machine will not be able to pick up any flaws in things like mathematical logic that might be causing things to go wrong. But it will help you to get a working program. It might not work properly, but that's not the 64's fault!

Of these 33 error messages, 13 are concerned with disk drives and/or tape decks, and we won't be looking at those this month. The other 20 are all concerned with the programming side of life, and it is these 20 that we will be examining this month.

They can be divided up into three different categories: mathematical errors (of which there are five specific types), input errors (another five), and operational errors (there are ten of these). We'll be looking at each one in turn, so let's start by considering the mathematical set of errors and their corresponding messages.

An illegal quantity error can be one of the more misleading ones, as there are times when it can occur without anything noticeably being wrong. There are two main causes for this sort of an error. First of all, if you are using files to disk or tape, or you're attempting to address various different devices like disk and printer, then trying to use a file number greater than 255 or a device number that is also greater than 255 will cause this error to be generated.

The second cause concerns integer variables. Plenty of people use them, but they have a very limited range, which runs from -32768 to +32767. Any calculation involving integer variables that throws up an answer outside of this range will produce the illegal quantity error message. The solution is to use ordinary variables instead of integer ones. That is, use things like Z rather than Z%.

An overflow error cannot be arrived at using integer variables, only ordinary floating point ones are able to generate one of these. If the result of a calculation exceeds plus or minus 1.7E+38 (roughly!) then the error message will be printed onto the screen and your program will come to an abrupt halt. So, the solution to this is to make smaller calculations! If you're using negative values of E (that is, ten to the power minus something) then you won't get any error messages. You won't get any sense out of your programs either, because the variable will eventually reduce itself to zero. Again, the solution to this particular problem is not to make such excessive calculations. To quote Del Boy: "You know it makes sense".

A division by zero error is a fairly obvious one, in that somewhere along the line you are attempting to divide a number by zero. In the world of mathematics the answer to that calculation would be infinity, but as far as the world of the Commodore Computer goes the answer is a division by zero error. So check all your variables very carefully. Perhaps you haven't defined one before using it, or, more commonly, you've changed the variable name without realising it, so that the array TOPS() has become TOP(). Then, attempting to divide A by TOP(1) would result in a division by zero error, because the variable is undefined and thus is automatically given a value of zero. You can divide zero by something, no problem there, you'll just get an answer of zero.

An undefined function error occurs when, reasonably enough, you haven't defined a function! There are many ways of doing this, like changing the name of your function halfway through a program so that the computer doesn't recognise it, or merging a common subroutine into your fledgling program while forgetting that the subroutine uses a function. Just define all functions with the DEF FN statement at the start of your programs, and you'll be all right.

A formula too complex error is usually the start of a nightmare. If you smoke, start smoking. If you don't, get the coffee out, because this sort of error frequently means an extensive study of a line of programming logic that the computer has, for some reason, looked at and suffered the 8 bit version of a nervous breakdown. What has usually happened (and at least the 64 tells you which line to start looking at) is that a mathematical calculation has got a million and one brackets in it, the computer has looked at it all and thought "stuff this for a game of soldiers, I'll give out an error message", and your program has halted. The solution to this is to weed out some of the brackets, and break the calculation down into smaller parts. Just keep on doing that until the computer finally accepts it all and carries on with your program.

That marks the end of the mathematical errors, and on the whole they are fairly easy to sift out of your programs and correct. The next lot aren't quite so straightforward, as some of them depend on the person using your program. That is because we are talking about the five errors that can be grouped under the heading of "Input Errors".

A type mismatch error could well be that between Bill Wyman and Mandy Smith, although they might be very happy together for all I know. I did hear from a friend of mine (hello John!) about a novice programming friend of his who, on running a program of his own creation, saw things stop with the message type mismatch error in 10. That is precisely what he did! He typed "mismatch error" into line 10, and then wondered why the program still wasn't working.

Most of us will encounter this error when, in response to an INPUT command, a string is given when a number is expected. The solution is to write your own input routine and ignore the INPUT statement completely. It can also occur when an invalidly formed number has been found in a READ statement, which involves checking your data and variables very carefully.

A string too long error can be created quite by accident. What it means is that the string variable in the line in question has exceeded 255 characters in length, which is the maximum limit for any string. You might look at the line and say "don't be ridiculous", but you might well have to look elsewhere for the solution to this problem. Try looking for anywhere where you might have concatenated strings and, possibly, used the wrong one. Input routines that are used again and again without resetting the input string to a null one can also cause this error, as indeed can any repeated use of the same string that doesn't reset it. The solution: reset the string, of course!

An extra ignored error is one strictly for the user of your programs, and really those programs should be written in such a way as to make it impossible for the user to invoke this error. It will occur, once again, when you use the INPUT statement to accept information from the user. If you want only one item of information, a name for instance, then you might have used something like INPUT A$, and if the user types in PETE-,WIGAN then the "extra" bit, the ",WIGAN", will be ignored. What's more, the computer will tell you that it's ignoring it! As with the type mismatch error, the best approach is to write your own input routine and ignore the built-in routine altogether.

Yet another error message that can be brought into play by the user, and which once again revolves around the INPUT statement, is the redo from start message. The solution (before we look at the problem!) is again the same: use your own input routine and ignore the one supplied by the computer. It's hard enough getting your programs working for yourself, you don't want the end user coming along and creating error messages of their own. The problem? If you are using the INPUT statement and want a name to be entered using INPUT A$ and the user responds with 10, there is no error. If, on the other hand, you're using the INPUT statement and want a number to be entered using INPUT A and the user responds with PETE, then the computer will tell the user off by displaying the redo from start error message. Numbers can be entered and stored as strings, but strings cannot be entered in place of numbers.

With so many errors associated with the INPUT command I'm surprised anyone ever uses it, but the last of the "input errors", for once, does not use INPUT.

Well, I suppose it could be involved with an INPUT statement, but it's not the input itself that is causing the error, it is something else. Anyway, this error is known as the bad subscript error. You can probably guess straight away what it is, although the causes and cures are virtually endless. If you're using an array that you've dimensioned, like A(12), and you try to store some information in A(13), then an error is obviously on the way. Also, you can't have things like A(-1). Similarly, if you haven't dimensioned an array and tried to store something in B(11), an error would again occur. Using B(5) would be all right, since arrays only have to be dimensioned if you are going to reference anything in double figures.

A singly dimensioned array, like A(12), cannot refer to A(12,2): you would have to specifically dimension a two-dimensional array to deal with that situation. All of these are fairly easy to spot when using numbers, but if, as is more common, you are using variables, then you could be in for a long spell of trial and error as you try to track the fault down. Obviously a variable is holding a value that it shouldn't, so put some breaks into the program (by using STOP) so that you can print out the value of the variable and keep an eye on it. Then re-start the program with CONT and carry on until you find the spot that's causing the mistake. It could take a long time!

That's the end of the so-called "input" errors and the start of what we might refer to as the "operational errors". These are mostly errors in the logic of the program, such as the world infamous syntax error, but some of them are not. A can't continue error, for instance, although we will come to that later. The first two, though, if pointed out by the computer, are definitely down to nobody but yourself. Your program, my friend, has been found wanting in logic.

A next without for error should be spotted when you're running through the program for the first time, but it is surprisingly easy to miss one. Take the following line of code:

FOR I=1 TO 10:IF I=5 THEN FOR J=1 TO 6:A=A+J:NEXT J:NEXT I

which at first glance might look all right, but it isn't. What about when I doesn't equal 5? There is no NEXT statement waiting for it, so you'll have to watch out for that sort of thing. You'll also have to be careful about the names you use in your loops as well. Why everyone uses I all the time I have no idea, but if you are in a loop that involves I don't start another one somewhere that also involves I. The computer would think "I I, not having that", and disaster occurs. Get into the habit of putting NEXT J:NEXT I rather than NEXT J,I to avoid invoking any errors. That way, it will become second nature to put NEXT K rather than just NEXT, then later on wonder why everything's gone wrong.

A return without gosub error should also be spotted when you're first entering your program, but again it's always easy to miss one, especially if the program is of any great length. Adventure games, for instance, which in Basic will contain a host of golden GOSUBs and hopefully matching RETURNs, frequently go off into tangled webs of programming that dash about all over the place. In such a convoluted mass of code it's all to easy to think that it's about time to stick a RETURN in and get back to the main program flow, when in actual fact it wasn't a subroutine that sent you here in the first place.

Just take a bit more time and trouble over your programming, and don't confuse GOTOs and GOSUBs in order to avoid this sort of error.

An out of data error would, you might think, be an easy one to sort out, but once again it can be quite tricky to actually pin down and isolate, especially in a program of any length that involves a lot of data. Basically, the program is trying to read in some data and thinks that it's run out of it. The problem will usually lie in the data statements themselves, although sometimes you might just have made a simple typing error and be trying to read in data that was never meant to be read in at all. You might type FOR I=1 TO 16 when you really meant 15: easy enough to do.

You could also get into a bit of a muddle by too much use of the RESTORE command. Unlike some Basics, the 64 won't let you RESTORE to a specific line number, you just have to restore the whole lot of data, which could implant some confusion into your

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program.

But generally speaking, it will be the data itself. More than likely you will have missed a comma out somewhere (like 1,4,2,45,6,2 when the 45 should have been 4,5), either in collections of numbers or strings. In strings you might have "Bill","Pete","Dave,John","Fred", and "Dave,John" would be read in as one item, as the comma would be taken to be part of the string. Tricky johnnies, data statements.

An out of memory error generally means that your program is too big and there just isn't enough room in the elephantine memory of the 64 to hold it all. If that is the case (try PRINT FRE(0) to see what the 64 thinks) then you'll just have to shorten your program. Use OK= FRE(0) to get rid of unwanted strings to help reduce overheads. But, your programming logic might be at fault. Too many nested FOR ... NEXT loops or GOSUBs and RETURNs could also be the cause of your out of memory error, so always be careful to check for those as well, especially the latter one. Lengthy programs can easily get into trouble with GOSUBs and RETURNs, causing no end of fuss and bother for the 64 and, ultimately, you.

An undefined statement error is an easy one to spot. If a line of your code reads GOTO 230 and there is no line 230, then that's the source of the error. What you meant to type instead of GOTO 230, though, is another matter, and might take quite a while to sort out. I remember programming on a Spectrum and discovering, to my horror, that if a line number specified in GOTO or a GOSUB didn't exist then the program just carried on at the next available line, causing all sorts of fun and games. Fortunately the 64 just stops program execution and waits while you, hopefully, sort things out.

A re-dimensioned array error should be similarly easy to find. The computer will tell you the line that's causing the problem, then all you have to do is either re-name the new array, eliminate the old one, or wonder what on earth it's meant to be doing. This kind of thing usually occurs in short programs (games, typically) where you ask the user if they want another go and, if they do, you trundle off to a line somewhere near the start of the program. The array is then encountered for a second time, with the result re-dimensioned array error. You'll just have to fiddle about to sort that one out.

A break error will occur when you've put a STOP statement somewhere in your program, perhaps, as suggested earlier, for checking the state of various variables. You can examine the program to your heart's content, printing out variables and positions in FOR ... NEXT loops and so on, but what you mustn't do is alter a line of the program, otherwise you'll get the next error.

This is a can't continue error, when you've stopped a program with STOP and tried to carry on with CONT. Altering a program in any way prevents you from using CONT, as all variables and arrays are wiped out, so don't alter the program!

And that leaves us with syntax errors (ignoring illegal direct errors). Syntax errors can be a real pain in the proverbial. Sometimes they're easy to spot (missing brackets, letters left out of keywords, and so on) but sometimes they are not. Like when you try and READ a DATA string into a number, when the syntax error message will tell you that the error is in the data line, although it looks like a perfectly acceptable line of a program.

I could write more about syntax errors, but I won't. I just hope that you don't get too many, and if you do then I hope you soon sort them out. Bye for now!

P.G.

Program Submission Procedure

DO NOT submit any program or routine that you do not either own or have authority to do so.

ALWAYS include your name, address and date on all material sent.

NEVER use staples, use paperclips if necessary.

If you are using TAPE save the program at least TWICE on each side. DO NOT USE TURBO SAVE SYSTEMS.

If you are using DISK save the program at least twice and call the second program BACKUP.

IDENTIFY your tape/disk with: your name and address, the program name and WHAT COMPUTER it is for.

PLEASE do not submit hand-written work, unless it is unavoidable. * Note *** you can always write your instructions in the form of a computer program, eg 1 PRINT 'your text' etc.**

INCLUDE a short statement of what your program is supposed to do.

IF YOU USE A WORDPROCESSOR supply a standard ASCII file of the article, this allows us to load it into our standard wordprocessors.

INCLUDE the following STANDARD header on all programs. Even if your program is in multiple parts, include this information on each part
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* Programming Tips *

If you can, use CHR$(x) type commands instead of graphic characters.

Renumber your program in a standard form, most readers use auto number utilities to ease typing in.

Try to keep instructions within the program fairly short. You can expand on them within the text if necessary

TEST YOUR PROGRAMS..better still get a friend to test them for you.
IF YOUR PROGRAM CONTAINS MACHINE CODE:
Please use DECIMAL data statements, NOT HEX for the BASIC loader. Keep the same number of data statements on each line (MAX 14) and use the three digit format if possible. eg 000,010,243,001 etc.

DIMEG

By James Fry for C-64

This program allows the user to redirect any of the basic keywords to his own routines. Very useful to the keen programmer.

```
1000 REM ***  DIMEG BY JAMES FRY   ***
1010 L=49152
1020 FORX=0TO17:T=0:FORY=0TO14
1030 READA:IFA<0ORA>255THEN1060
1040 POKEL,A:L=L+1:T=T+A:NEXT
1050 READA:T=T-(INT(T/256)*256)
1060 IFT<>ATHENPRINT"DATA ERROR IN LINE";1080+(X*10);"CHECKSUM <>";A:STOP
1070 PRINT1080+(X*10);"OK":NEXT
1080 DATA032,068,229,169,014,141,001,004,169,015,141,002,004,169,033,167
1090 DATA141,003,004,096,032,068,229,169,019,141,001,004,169,015,141,208
1100 DATA002,004,169,018,141,003,004,141,004,004,169,025,141,005,004,066
1110 DATA169,044,141,006,004,169,009,141,007,004,169,039,141,008,004,031
1120 DATA169,013,141,009,004,169,019,141,011,004,169,012,141,012,004,250
1130 DATA169,005,141,013,004,141,014,004,169,016,141,015,004,169,009,246
1140 DATA141,016,004,169,014,141,017,004,169,007,141,018,004,096,032,205
1150 DATA068,229,169,007,141,001,004,169,015,141,002,004,169,001,141,237
1160 DATA004,004,141,006,004,169,023,141,005,004,169,025,141,007,004,079
1170 DATA096,032,228,255,240,251,096,032,068,229,162,017,142,005,212,017
1180 DATA202,142,006,212,202,142,024,212,160,020,200,140,001,212,162,245
1190 DATA017,142,004,212,032,198,192,162,016,014,004,212,192,100,208,169
1200 DATA235,136,140,001,212,162,017,142,004,212,032,198,192,162,016,069
1210 DATA142,004,212,192,020,208,235,169,000,141,004,212,096,157,072,072
1220 DATA160,005,162,255,202,208,253,136,208,250,104,168,096,000,000,159
1230 DATA173,000,160,141,000,160,238,226,192,238,229,192,208,242,238,077
1240 DATA227,192,238,230,192,173,227,192,201,192,208,229,169,054,141,049
1250 DATA001,000,096,000,000,000,000,000,000,000,000,000,000,000,000,097
```

Note Pad

Norman Hart C64

This is a handy utility that allows you to jot down notes while programming.

```
EHFI 100 REM ****************************
ABMN 110 REM *[SP26]*
LAPA 120 REM *[SP4]CBM[SP2]64 - NOTE PAD[SP4]*
NEBG 130 REM *[SP26]*
EAJH 140 REM *[SP26]*
ICNK 150 REM * WRITTEN BY - NORMAN HART *
JFEM 160 REM *[SP26]*
HPKB 170 REM *[SP26]*
NHGD 180 REM *[SP5]1ST OCTOBER 1988[SP5]*
FGKC 190 REM *[SP26]*
KDEL 200 REM ****************************
JOHP 210 :
JJMA 220 :
DBCO 230 POKE53280,7:POKE53281,7:PRINTCHR$(144)
JAEO 240 PRINTCHR$(147)
NLDM 250 PRINT
KMOK 260 PRINTTAB(8)"DEMO TEST FOR NOTE PAD"
AOOH 270 PRINT
DHHC 280 PRINTTAB(8)CHR$(18)"PRESS ANY KEY TO START"
CHOE 290 PRINT
```

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```
MKPC 300 PRINTTAB(10)"THIS AREA OF TEXT"
JNGC 310 PRINT
PDND 320 PRINTTAB(9)"WILL BE OVER WRITTEN"
JCPJ 330 POKE198,0:WAIT198,1
JEKK 340 GOSUB430
KPBN 350 PRINTTAB(1)CHR$(18)"TEST OVER RETURNING TO START SCREEN"
CBKC 360 FORX=1TO1000:NEXT:GOTO240
AEEL 370 :
BNAL 380 :
BPJO 390 :
GDPG 400 REM::::::::::::::::::::::::::::::::
HHCB 410 REM:[SP3]THE ROUTINE STARTS HERE[SP4]:
DCCF 420 REM::::::::::::::::::::::::::::::::
GOPM 430 U=0[SP4]:REM UPPER LIMIT[SP3]MIN=0
KHBP 440 D=20[SP3]:REM DEPTH LIMIT[SP3]MAX=20
NBFF 450 TB=8[SP3]:REM F7 TABULATION MAX=36
NAEI 460 FL=255 :REM FILE NUMBER[SP2](1 TO 255)
JGBE 470 PR=127 :REM PRINT FILE NO(1 TO 127)
CELK 480 REM::::::::::::::::::::::::::::::::
GOFK 490 IFDM%=0THENDIMNP$(20):DM%=1
KLLG 500 U=U+2:D=D+1
NEHC 510 IFMC=0THENMC=1
ACFF 520 IFML=0THENML=U
OIHC 530 IFPEEK(53272)=21THENDV=0
OEJM 540 IFPEEK(53272)=23THENDV=7
CENE 550 PRINTCHR$(8):C=0
LJLE 560 L=U-2:GOSUB1000
IMFC 570 PRINTCHR$(18)" NOTE PAD "CHR$(146)"___________________________"CHR$(18)"F1:QUIT
     PAD"
FJMJ 580 REM ↑ 29 X COMMODORE/"P" - CHR$(175)
PNJJ 590 PRINTCHR$(180)"[SP37]"CHR$(170)CHR$(145)
PEAD 600 PRINTTAB(TB)CHR$(42)
COCD 610 FORX=1TOD
AHLG 620 PRINTCHR$(158)CHR$(34)"[SP37]";:REM 37SPACES
NOBO 630 PRINTCHR$(34):NEXT
GBGD 640 PRINTCHR$(144):L=U:GOSUB1000
CIPP 650 FORX=1TOD-1:PRINTTAB(1)"[SP37]":REM 37SPACES
FFIE 660 NEXT
JMIG 670 PRINTCHR$(180)SPC(TB-1)CHR$(42)SPC(37-TB)CHR$(170)
ABBD 680 L=U+D:C=0:GOSUB1000
FLDF 690 PRINTCHR$(18)" F3=PRINT[SP2]"CHR$(146)CHR$(183);
FJFP 700 PRINTCHR$(18)" F5=CASE MODE "CHR$(146)CHR$(183);
ICMD 710 PRINTCHR$(18)" F7=TABULATE"CHR$(19)
IOIM 720 L=U:GOSUB1000
NDBB 730 FORX=0TOD-2:PRINTTAB(1)NP$(X):NEXT
MNOE 740 D=D+U-2
FMIP 750 L=ML:C=MC:GOTO1020
BLMO 760 GETA$:IFA$=""THEN760
CDOL 770 IFA$=CHR$(34)THENPRINTCHR$(39):C=C+1:GOTO1030
PGJE 780 IFA$>CHR$(31)ANDA$<CHR$(96)THENPRINTA$:C=C+1:GOTO1030
EFOG 790 IFA$>CHR$(192)ANDA$<CHR$(219)ANDPEEK(53272)=23THENPRINTA$:C=C+1:GOTO103
     0
NJJI 800 IFA$=CHR$(13)THENGOSUB1010:C=1:L=L+1:GOTO1030
IJDO 810 IFA$=CHR$(29)THENGOSUB1010:C=C+1:GOTO1020
NFOA 820 IFA$=CHR$(17)THENGOSUB1010:L=L+1:GOTO1020
DEKP 830 IFA$=CHR$(157)THENGOSUB1010:C=C-1:GOTO1020
KOKH 840 IFA$=CHR$(145)THENGOSUB1010:L=L-1:GOTO1020
LFAB 850 IFA$=CHR$(141)THENGOSUB1010:C=1:GOTO1020
PAOE 860 IFA$=CHR$(19)ANDL<>UTHENGOSUB1010:C=1:L=U:GOTO1030
MJEP 870 IFA$=CHR$(19)THENGOSUB1010:C=1:L=D:GOTO1030
FAPP 880 IFA$=CHR$(20)THENGOSUB1010:C=C-1:GOSUB950:PRINTCHR$(32):GOTO1020
ELGC 890 IFA$=CHR$(133)THENGOSUB1130:RETURN
JEPG 900 IFA$=CHR$(134)THENGOSUB1130:GOSUB1080:GOTO430
LFCL 910 IFA$=CHR$(135)THEN1040
IEGE 920 IFA$=CHR$(136)THENGOSUB1010:GOTO1060
GJKN 930 IFA$=CHR$(147)THENFORX=0TOD-2:NP$(X)="":NEXT:MC=1:ML=U:GOTO430
IGCL 940 GOTO760
```

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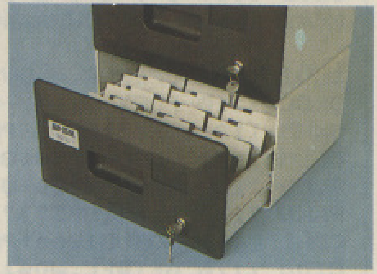

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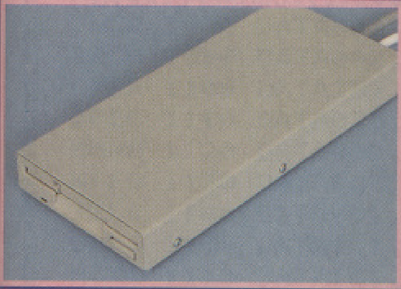

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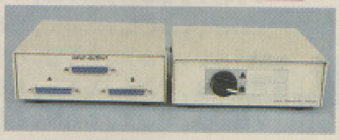

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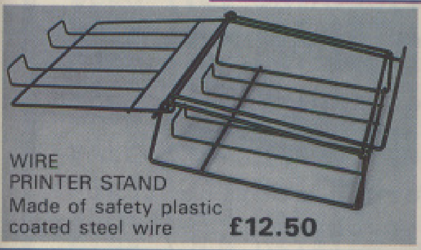

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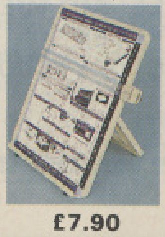

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```
MFBP 950 IFC>37ANDL>D-1THENC=37
DPEB 960 IFC>37THENGOSUB1150:C=1:L=L+1:GOSUB1000:PRINTWD$:C=C+LEN(WD$)
CGCC 970 IFC<1THENC=37:L=L-1
JENL 980 IFL<UTHENL=L+1
GPAC 990 IFL>DTHENL=L-1
FFDP 1000 POKE211,C:POKE214,L:SYS58732:RETURN
IEFD 1010 GOSUB950:X=1024+C+(L*40):POKEX,PEEK(X)-128:RETURN
NDJD 1020 POKE198,0
CNOA 1030 GOSUB950:X=1024+C+(L*40):POKEX,PEEK(X)+128:GOTO760
HALD 1040 IFPEEK(53272)=21THENPOKE53272,23:DV=7:GOTO760
FLMA 1050 IFPEEK(53272)=23THENPOKE53272,21:DV=0:GOTO760
IGGA 1060 FORM=1TOTB:X=1024+C+(L*40):IFPEEK(X)=96THENPOKEX,32
BKOF 1070 C=C+1:NEXT:C=TB:GOSUB950:GOTO1020
JOCD 1080 C=0:L=U-2:GOSUB1000
MKAJ 1090 PRINTCHR$(18)CHR$(31)"[SP2]HOLD DOWN ANY KEY[SP2]TO QUIT PRINTING[SP2]
     "CHR$(144)
LMOI 1100 OPENPR,4,DV
DKDC 1110 FORX=0TOML-U:PRINT#PR,NP$(X):IFPEEK(197)<>64THENX=ML-U+1
GKHM 1120 NEXT:CLOSEPR:RETURN
OELM 1130 GOSUB1010:OPENFL,3:MC=C:ML=L:C=0:L=U:GOSUB1000
JOND 1140 FORX=0TOD-U:INPUT#FL,NP$(X):NEXT:CLOSEFL:RETURN
PAKD 1150 A$="[SP37]":REM 37 SPACES
CDHE 1160 GOSUB1000:PRINTCHR$(158)CHR$(34):GOSUB1000:OPENFL,3
CIDD 1170 GET#FL,WD$:IFWD$<>CHR$(32)THENC=C-1:GOSUB1000:GOTO1170
MGBK 1180 GOSUB1000:PRINTCHR$(34):GOSUB1000
IION 1190 INPUT#FL,WD$:GOSUB1000:PRINTCHR$(144)LEFT$(A$,LEN(WD$)+1):CLOSEFL:RETU
     RN
S-ENTRY CODE = KFLA
```

SECURIFILE

By P. A. Croton

The following program will turn your sequential ASCIII files into a form that can only be read by you and this program. It is virturally impossible to read it without this program even if the hacker DOES know the correct code!

Type in the short loader program and save it on a disk. Next, type in the basic loader which contains all the program for securifile. Save this and then run it. Correct all errors as they are displayed and when the program is completly corrected, it will save a copy of itself.

All you have to do to load it is to load the short loader routine that you saved first. This will then boot the rest of the program

Using securifile.
After loading, securifile will display a quick message and leave you in the normal basic programming mode. All the usual basic functions can be used including relocation of the base address and securifile will not harm it. In return, securifile would like you to leave it alone!

You must not use the following locations: $02a7-$02ff & $a000-$cfff
If you do use these, You will probably lose what you write to them and corrupt securifile.

```
DCAA 10 PRINT"[CLR]PLEASE WAIT...LOADING"
NOJD 20 IFA=0THENA=1:LOAD"-- SECURIFILE --",8,1
NINH 30 IFA=1THENSYS49152
JKPL 40 PRINT"[CLR]SECURIFILE ACTIVE:"
MFCP 50 PRINT"[CD][F1] ENCRYPTER"
CMKK 60 PRINT"[CD][F3] DIRECTORY (DOESNT CORRUPT PROGRAM)"
CMDB 70 END
S-ENTRY CODE = GKCM
```

```
NBMH 10 FORI= 49152 TO 53100 STEP8
PEHP 20 CH=0:FORJ=ITOI+7
MLJO 30 READD:POKEJ,D:CH=CH+D:NEXT
AANE 40 READD:IFCH<>DTHENPRINT"ERROR IN LINE"PEEK(64)*256+PEEK(63):END
LEHM 50 NEXTI
FAOO 60 PRINT"[CLR]PLEASE STICK A DISK IN YOUR DRIVE AND"
OMGM 70 PRINT"PRESS ANY KEY TO SAVE THIS CODE."
KPKC 80 GETA$:IFA$=""THEN80
HHKN 90 POKE44,192:POKE43,0:POKE46,207
MPKM 100 POKE45,108:SAVE"-- SECURIFILE --",8,1
ELBA 110 POKE44,8:POKE43,1:POKE46,90
LJAB 120 POKE45,66:PRINT"[CLR]SAVE COMPLETED.TYPE SYS49152 AFTER RESET"
MCBD 130 PRINT"[CD2]ANY KEY TO RESET OR RUN/STOP TO BREAK!"
MOGJ 140 GETA$:IFA$=""THEN140
ADHI 150 SYS64738
IKCD 1000 DATA169,000,141,218,002,120,169,021,0840
BIFO 1010 DATA141,020,003,141,032,208,169,192,0906
GAPN 1020 DATA141,021,003,088,096,173,218,002,0742
MDLK 1030 DATA201,000,208,010,165,197,201,004,0986
GCPK 1040 DATA240,007,201,005,240,100,076,049,0918
KDEC 1050 DATA234,032,245,193,032,197,193,169,1295
NDDF 1060 DATA010,133,251,169,194,133,252,169,1311
NJEE 1070 DATA000,133,253,169,008,133,254,160,1110
JNCA 1080 DATA000,177,251,145,253,230,253,208,1517
BACH 1090 DATA002,230,254,230,251,208,242,230,1647
GKEA 1100 DATA252,165,252,201,208,208,234,169,1689
JFEC 1110 DATA035,133,046,169,001,133,043,169,0729
HMNA 1120 DATA088,133,045,169,008,133,044,169,0789
NFFG 1130 DATA147,141,119,002,169,082,141,120,0921
JELJ 1140 DATA002,169,085,141,121,002,169,078,0767
ODKI 1150 DATA141,122,002,169,013,141,123,002,0713
NGKL 1160 DATA141,218,002,169,005,133,198,076,0942
HKIM 1170 DATA049,234,169,001,141,218,002,032,0846
DCDO 1180 DATA245,193,032,197,193,169,001,133,1163
PHHB 1190 DATA043,169,008,133,044,169,088,133,0787
NJEM 1200 DATA045,169,035,133,046,120,160,000,0708
GEIO 1210 DATA185,182,192,201,255,240,030,032,1317
MDFF 1220 DATA210,255,200,076,168,192,147,017,1265
PALE 1230 DATA017,076,111,034,036,034,044,056,0408
IMHP 1240 DATA013,017,017,017,017,076,105,145,0407
ADAE 1250 DATA145,145,145,145,255,088,160,000,1083
CIPA 1260 DATA185,222,192,201,255,240,018,153,1466
MMLN 1270 DATA119,002,200,076,208,192,013,013,0823
BJIJ 1280 DATA083,121,052,057,051,057,050,013,0484
NNLO 1290 DATA255,169,010,133,198,076,049,234,1124
IFAF 1300 DATA169,000,133,198,165,198,201,000,1064
LFJD 1310 DATA240,250,032,197,193,173,228,002,1315
PBJL 1320 DATA133,043,173,229,002,133,044,173,0930
EBNO 1330 DATA230,002,133,045,173,231,002,133,0949
OFNO 1340 DATA046,169,000,141,218,002,096,162,0834
OFCH 1350 DATA000,134,251,134,252,134,253,134,1292
HBPO 1360 DATA254,142,219,002,172,219,002,162,1172
AKGN 1370 DATA000,142,220,002,174,219,002,181,0940
HBNF 1380 DATA251,024,121,168,002,149,251,200,1166
KAOK 1390 DATA200,200,200,174,220,002,232,224,1452
JMME 1400 DATA010,208,230,172,219,002,200,192,1233
COML 1410 DATA004,240,006,140,219,002,076,036,0723
ONLP 1420 DATA193,165,251,141,168,002,165,252,1337
FEJF 1430 DATA141,169,002,165,253,141,170,002,1043
MAOP 1440 DATA165,254,141,171,002,096,172,179,1180
```

```
GJIP 1450 DATA002,200,192,004,208,002,160,000,0768
KJBA 1460 DATA140,179,002,173,178,002,024,121,0819
GHPE 1470 DATA168,002,141,178,002,096,172,179,0938
PEBF 1480 DATA002,200,192,004,208,002,160,000,0768
FLII 1490 DATA140,179,002,173,178,002,056,249,0979
NMCM 1500 DATA168,002,141,178,002,096,032,250,0869
DEAM 1510 DATA192,160,000,185,169,193,201,255,1355
PCFJ 1520 DATA240,024,032,210,255,200,076,155,1192
OCEL 1530 DATA193,147,065,066,079,082,084,069,0785
IIHE 1540 DATA068,033,083,069,069,032,077,065,0496
ELEK 1550 DATA071,255,169,071,141,024,003,169,0903
EFMJ 1560 DATA237,141,040,003,096,169,054,133,0873
KPOF 1570 DATA001,160,000,169,000,133,251,169,0883
JBNB 1580 DATA004,133,252,169,000,133,253,169,1113
HGHO 1590 DATA160,133,254,177,251,170,177,253,1575
GFPG 1600 DATA145,251,138,145,253,200,208,243,1583
NPEO 1610 DATA230,252,230,254,165,254,201,192,1778
DKCP 1620 DATA208,233,230,001,096,165,043,141,1117
OHCH 1630 DATA228,002,165,044,141,229,002,165,0976
DJBP 1640 DATA045,141,230,002,165,046,141,231,1001
NFGM 1650 DATA002,096,000,013,008,194,007,158,0478
PCIP 1660 DATA050,048,054,051,077,084,000,000,0364
MHED 1670 DATA000,162,003,160,000,185,105,007,0622
IBGI 1680 DATA153,000,004,200,208,247,202,240,1254
KMLP 1690 DATA009,238,021,008,238,024,008,076,0622
EHPA 1700 DATA017,008,076,204,004,198,001,238,0746
PMBL 1710 DATA032,208,230,001,076,080,005,120,0752
MNEL 1720 DATA230,001,198,046,165,045,162,254,1101
ONOK 1730 DATA133,251,134,252,160,000,177,045,1152
LOBK 1740 DATA145,251,200,208,249,198,252,198,1701
JLHN 1750 DATA046,165,046,201,008,208,239,169,1082
GHBA 1760 DATA020,133,251,230,252,230,252,162,1530
BBCB 1770 DATA008,169,001,134,046,133,045,132,0668
JNIM 1780 DATA255,032,194,004,201,243,208,039,1176
BEAJ 1790 DATA032,080,005,170,134,250,201,004,0876
PENC 1800 DATA176,004,169,243,208,003,032,080,0915
IKGA 1810 DATA005,160,000,145,045,200,198,250,1003
BCKN 1820 DATA208,249,152,024,101,045,133,045,0957
OFIA 1830 DATA144,002,230,046,076,052,005,160,0715
KJLF 1840 DATA000,145,045,230,045,240,243,169,1117
MLAH 1850 DATA151,162,023,228,046,208,194,197,1209
HDGN 1860 DATA045,208,190,133,174,134,175,169,1228
IKLI 1870 DATA055,133,001,234,088,032,089,166,0798
CENM 1880 DATA076,174,167,162,255,134,247,134,1349
JCNC 1890 DATA248,232,169,001,133,254,169,127,1333
OPFK 1900 DATA133,253,198,255,016,016,230,251,1352
LHGN 1910 DATA208,002,230,252,169,007,133,255,1256
MPJO 1920 DATA160,000,177,251,133,249,006,249,1225
GLPJ 1930 DATA176,010,164,254,165,253,057,247,1326
JFIK 1940 DATA000,153,247,000,138,010,168,165,0881
EKPM 1950 DATA247,056,249,226,005,165,248,249,1445
GDFN 1960 DATA227,005,144,014,224,012,240,010,0876
NGHN 1970 DATA232,056,102,253,176,196,198,254,1467
HOCM 1980 DATA240,188,138,240,015,165,247,056,1289
CGCL 1990 DATA249,224,005,133,247,165,248,249,1520
NNLK 2000 DATA225,005,133,248,164,254,240,007,1276
IACA 2010 DATA165,248,133,247,136,132,248,165,1474
FFOM 2020 DATA253,074,144,007,070,248,102,247,1145
GADI 2030 DATA076,190,005,189,210,005,101,247,1023
MIEH 2040 DATA168,185,000,006,096,000,000,000,0455
```

S–ENTRY

C64/128

BASIC COMMANDS

S–ENTRY intercepts several vectors in the operating system, and because of this the normal basic commands are not available ... don't worry ... you can still use them by prefixing the command with the @ symbol, so SAVE would become @SAVE, etc.

NOTE: do not use any DOS wedge, or you will confuse S–ENTRY.

S–ENTRY DISABLE

Before you run any programs that you have entered, S–ENTRY MUST BE DISABLED. Enter an ! on its own and S–ENTRY will be removed from memory and the normal operating system restored. REMEMBER ALWAYS SAVE A PROGRAM BEFORE YOU RUN IT!

MISSING LINES

In order to provide you with a flexible system, S–ENTRY only checks on a line by line basis. So if you miss out line 540 say, S–ENTRY will NOT report an error.

This may sound odd, but it does allow you to enter part of the program, then save it and come back to it at a later date. This is also helpful if you and several friends are splitting up the job of entering a large program, each person will be able to say that what has been entered is correct.

To make sure that you have the entire program entered correctly, Enter type '&' symbol on its own. S–ENTRY wil then calculate the S–ENTRY code for the program in memory, you can compare this with the final S–ENTRY code printed at the end of the listing.

ADVANCED USE

If you think you are good enough not to use the S–ENTRY system, you can simply enter the normal basic lines after the S–ENTRY code. But what if you get it wrong? Well S–ENTRY has a command that will produce a summary of the S–ENTRY code and the line number ion memory; you can then compare this with the published S–ENTRY codes and thus track down the problem. This command is «–LIST; you can pause the list by using the Shift/Shift Lock keys. The command will also accept a line numbner range, i.e. 100-200 or 200- etc.

The ONLY difference that S–ENTRY makes to the published listing is the addition of the four character code before the line number, and the addition of the final S–ENTRY code at end of the listing.

S–ENTRY COMMAND SUMMARY

& Calculates the S–ENTRY code for the entire program in memory.
@ Prefix to a basic command ie @DSAVE or @LOAD
! Remove S–ENTRY
«–LIST Display S–ENTRY code summary, use shift/shift lock to pause.

YOU MUST

1. Use EXACTLY the same line numbers.
2. Enter the program exactly as printed, including all REMs.
3. Use EXACTLY the same commands, FULL command names MUST be used, ie '?' cannot be used instead of PRINT.
4. Remember to convert the easy enter codes ie [SP9] means type 9 spaces.
5. Type anything between " " (quotes) EXACTLY as published.

```
100 REM
110 REM********************************
120 REM*                              *
130 REM*         CCI S-ENTRY          *
140 REM*                              *
150 REM*      FOR THE C64 & C128      *
160 REM*                              *
170 REM*(C)1989,A.ESKELSON & G.CATTLEY*
180 REM*                              *
190 REM********************************
200 REM
210 M1=256*PEEK(179)+PEEK(178):C8=65281:C9=C8-2:FA=250:FB=251:FC=252
220 POKE C8,00:REM IF 128 SET BANK 0
230 MC=M1+9:CC=0:FOR I=0 TO 61:READ ZZ
240 CC=CC+ZZ:POKE M1+I,ZZ:NEXT I
250 REM DATA FOR CRC
260 DATA 169,000,133,250,133,251,133,252,096,169,000,133,252,162,008,165
270 DATA 250,042,038,253,042,042,042,042,042,069,253,133,253,165,250,069
280 DATA 253,133,253,165,251,042,042,042,069,253,133,253,038,252,042,069
290 DATA 253,106,038,251,038,250,202,208,214,166,251,165,250,096
300 IF CC<>9069 THEN PRINT"ERROR IN CHECKSUM DATA":STOP
310 REM
320 REM TEST FOR C128/C64
330 IF M1=2816 THEN C64=2:SA=3072:GOTO 360
340 IF M1=828 THEN C64=1:SA=49152:GOTO 360
350 PRINT"ERROR NOT C64 OR C128 ?":STOP
360 READ TC:EQ=0:EA=SA:SYS M1
370 HB=INT(SA/256):LB=0
380 REM START OF LOOP
390 READ DA$:REM READ THE DATA
400 IF DA$="-9999" THEN 480:REM FINISHED ALL THE DATA
410 DA=VAL(DA$):PRINTSA;CHR$(145)
420 IF LEN(DA$)<>3 THEN 450
430 POKE SA,DA:SA=SA+1
440 POKE MC+1,DA:SYS MC:GOTO 390
450 A%=PEEK(FA):X%=PEEK(FB):CK=A%*256+X%
460 IF CK<>VAL(DA$) THEN EQ=1:GOTO 480
470 GOTO 390
480 IF EQ OR (CK<>TC) THEN 510
490 POKE FA,LB:POKE FB,HB:POKE FC,C64:SYS EA
500 PRINTCHR$(147);"S-ENTRY ACTIVE. TYPE '@NEW' TO CLEAR LOADER":END
510 PRINT"LINE/DATA ERROR IN LINE";
520 PRINT PEEK(66)*256+PEEK(65):END
530 DATA 44232
540 DATA 024,165,250,105,028,133,176,165,251,105,002,133,177,169,000,170,48900
550 DATA 168,024,177,176,133,254,200,177,176,101,251,133,255,200,177,176,00903
560 DATA 201,255,240,008,024,101,251,129,254,200,208,229,024,165,250,105,18744
570 DATA 112,133,176,165,251,105,002,133,177,024,165,250,105,126,133,254,17887
580 DATA 165,251,105,000,133,255,162,000,164,252,177,176,072,161,176,240,44466
590 DATA 017,168,104,145,254,165,176,024,105,003,133,176,144,002,230,177,32098
600 DATA 208,230,104,169,000,141,005,003,169,126,141,004,003,169,000,133,49661
610 DATA 252,173,038,003,141,152,002,173,039,003,141,153,002,096,160,000,49456
620 DATA 132,251,132,250,132,180,132,254,132,253,185,000,002,201,032,208,52892
630 DATA 003,200,208,246,201,095,208,017,072,169,171,141,038,003,169,002,22812
640 DATA 141,039,003,032,154,002,104,208,053,072,173,152,002,141,038,003,55274
650 DATA 173,153,002,141,039,003,104,201,064,240,035,201,033,240,013,201,41233
660 DATA 038,208,033,076,068,001,173,141,002,208,251,096,169,067,141,005,20351
670 DATA 003,169,013,141,004,003,169,000,153,000,002,076,013,067,032,128,63881
680 DATA 003,024,144,247,165,252,240,007,169,000,133,252,024,144,236,132,15406
690 DATA 252,152,024,105,004,168,185,000,002,240,007,032,211,001,200,208,05629
700 DATA 245,000,164,252,162,001,185,000,002,072,169,032,153,000,002,104,21893
710 DATA 056,233,065,024,010,010,010,010,133,252,200,185,000,002,072,169,54075
720 DATA 032,153,000,002,104,056,233,065,041,015,005,252,213,250,208,011,11281
730 DATA 200,202,016,210,169,255,133,252,076,209,077,169,000,133,252,162,54224
740 DATA 022,180,000,003,162,001,181,045,149,176,202,016,249,141,001,255,56924
750 DATA 160,000,132,251,132,250,132,180,132,254,132,253,160,001,177,176,45691
760 DATA 240,040,200,177,176,032,211,001,200,177,176,032,211,001,200,177,58968
770 DATA 176,240,007,032,211,001,200,016,246,000,160,000,132,254,177,176,22791
780 DATA 170,200,177,176,134,176,133,177,208,210,160,000,140,000,255,185,63767
790 DATA 154,001,240,022,032,210,255,200,208,245,083,045,069,078,084,082,26008
800 DATA 089,032,067,079,068,069,032,061,032,000,162,001,181,250,072,041,42873
810 DATA 240,074,074,074,074,024,105,065,032,210,255,104,041,015,024,105,62214
820 DATA 065,032,210,255,202,016,229,141,003,255,169,000,141,000,002,076,51028
830 DATA 222,000,096,201,034,208,008,072,165,254,073,255,133,254,104,201,08627
840 DATA 032,208,004,036,254,016,052,133,180,169,001,072,165,251,041,128,08832
850 DATA 042,038,253,165,251,041,008,106,106,106,069,253,133,253,165,251,26391
860 DATA 069,253,133,253,165,250,042,042,042,069,253,133,253,038,180,042,59214
870 DATA 069,253,106,038,250,038,251,104,010,144,208,096,100,000,000,197,16654
880 DATA 000,001,253,000,001,103,001,001,109,001,001,117,001,001,145,001,10659
890 DATA 001,209,001,000,118,000,002,124,000,002,159,000,002,165,000,002,52822
900 DATA 172,000,002,178,000,002,211,002,002,001,003,002,010,003,002,019,14849
910 DATA 003,002,035,003,002,050,003,002,028,003,002,231,002,002,222,002,52909
920 DATA 001,047,003,002,194,002,002,200,002,002,042,003,000,255,255,255,04528
930 DATA 079,165,067,004,124,013,094,124,013,095,165,067,201,043,045,097,06351
940 DATA 115,128,098,000,003,187,138,209,188,164,077,073,141,211,074,002,22835
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970 DATA 013,240,054,166,177,208,037,201,058,176,038,201,046,208,016,072,22106
980 DATA 173,152,002,141,038,003,173,153,002,141,039,003,104,208,018,164,50064
990 DATA 176,153,146,002,230,176,201,032,208,002,230,177,032,211,001,169,15787
1000 DATA 001,166,182,164,181,108,152,002,096,164,177,240,244,169,002,072,30286
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1020 DATA 225,002,104,041,015,024,105,065,032,225,002,104,074,144,224,169,27482
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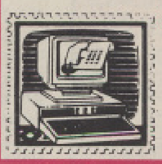

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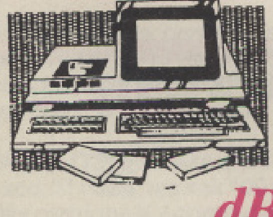

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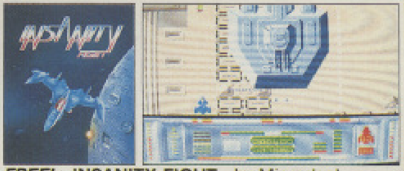
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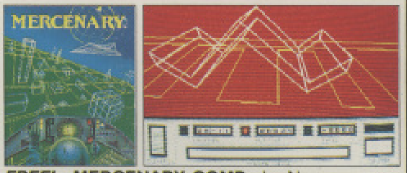
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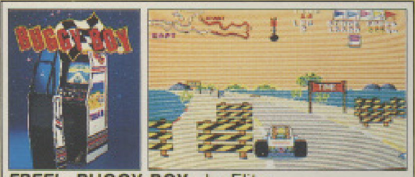
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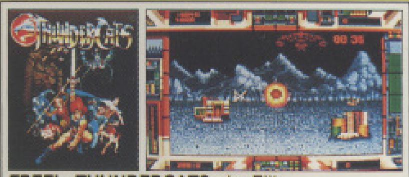
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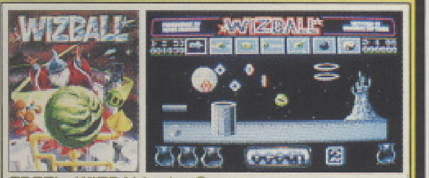
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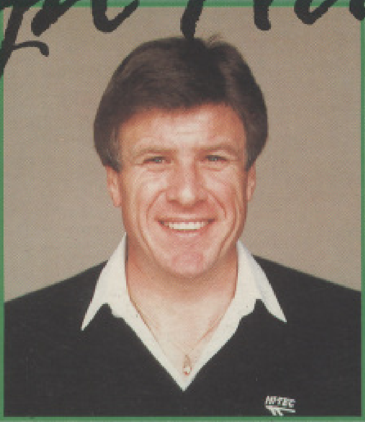

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